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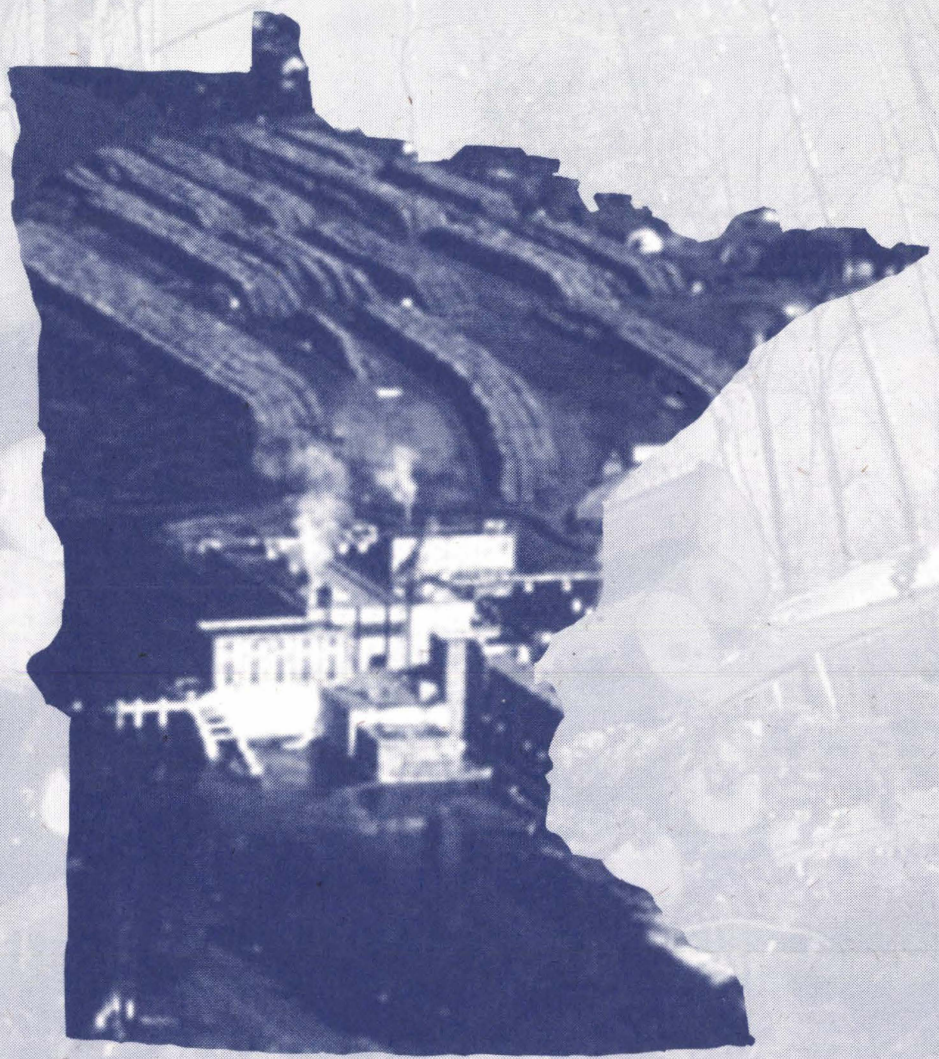
Minnesota Timber Industry—An Assessment of Timber Product Output and Use, 1997

William H. Reading, IV and John Krantz



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FOREWORD

This bulletin reports findings of a survey of all primary wood-using mills in Minnesota in 1997 and details the industry's size and composition, its use of roundwood, and its generation and disposition of wood residues. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and forest research.

Special thanks are given to primary wood-using firms that responded to the survey and to the Minnesota Department of Natural Resources for canvassing the respondents. Their cooperation is greatly appreciated.

In this bulletin, all volumes are reported in product-specific standard units and/or cubic feet. Volumes reported by mills in nonstandard units were converted to standard units using regional conversion factors. Reported trends and changes in the primary wood-using industry in Minnesota are based on comparisons with previous surveys conducted in 1975, 1988, 1990, and 1992. Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

CONTENTS

Highlights **1**

Primary Timber Industry—Industrial Roundwood 1

Industrial Roundwood Receipts 1

Industrial Roundwood Production 1

Pulpwood 5

Saw Logs 5

Tree Utilization 8

Primary Mill Residue 10

Literature Cited 10

Appendix 11

Study Methods 11

Definition of Terms 11

Common and Scientific Names of Tree Species Mentioned in This Report 14

Table Titles 16

Tables 17

Minnesota Timber Industry—An Assessment of Timber Product Output and Use, 1997

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HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

- Between 1992 and 1997, the number of sawmills in Minnesota decreased from 568 mills to 396 mills (Hackett 1997). Most of this decrease occurred in the small sawmill category and was due to reporting technique changes as noted in the foreword of this publication.
- Most of Minnesota's mills are located in the northeastern section of the State where most of the timber resource is located (fig. 1).

INDUSTRIAL ROUNDWOOD RECEIPTS

- Industrial roundwood receipts by Minnesota mills increased from 264 million cubic feet to 277 million cubic feet between 1992 and 1997, an increase of approximately 5 percent (table 2, fig. 2).
- Industrial roundwood receipts by sawmills decreased from 60 million cubic feet in 1992 to 48 million cubic feet in 1997, a decrease of 20 percent (table 2, fig. 2).
- Industrial roundwood receipts by pulpwood mills climbed from 198 million cubic feet in 1992 to 215 million cubic feet in 1997, an increase of 9 percent (table 2, fig. 2).
- The largest increases, as a percentage of roundwood volume processed, took place in mills classified as "other mills" (veneer mills, pole and post mills, chip mills, and other miscellaneous mills). The volume of roundwood processed by these mills increased by 128 percent between surveys, from 6 to 14 million cubic feet (table 2, fig. 2).
- The ratio of hardwood roundwood to softwood roundwood processed increased from 3.19:1 in 1992 to 3.58:1 in 1997 (table 2, fig. 3).

INDUSTRIAL ROUNDWOOD PRODUCTION

- Between surveys, industrial roundwood production from Minnesota's forests increased by 6 percent. Softwood production increased by 4 percent while hardwood production increased by 6 percent (table 3, fig. 4).
- In 1997, the Aspen-Birch Survey Unit (fig. 5) accounted for 34 percent of the total roundwood production. This is a drop from 1992 when the Aspen-Birch Survey Unit accounted for 39 percent (table 3, fig. 6).
- Aspen roundwood production comprised 82 percent of hardwood roundwood production. The next largest harvest level for a species group was birch at 6 percent. In 1992, aspen accounted for 85 percent of the roundwood production (table 3, fig. 7A).

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John Krantz, Forester, was the team leader for the Minnesota Department of Natural Resources, Forest Utilization and Marketing Program at the time the data for this report were being collected. He retired during the summer of 2001.

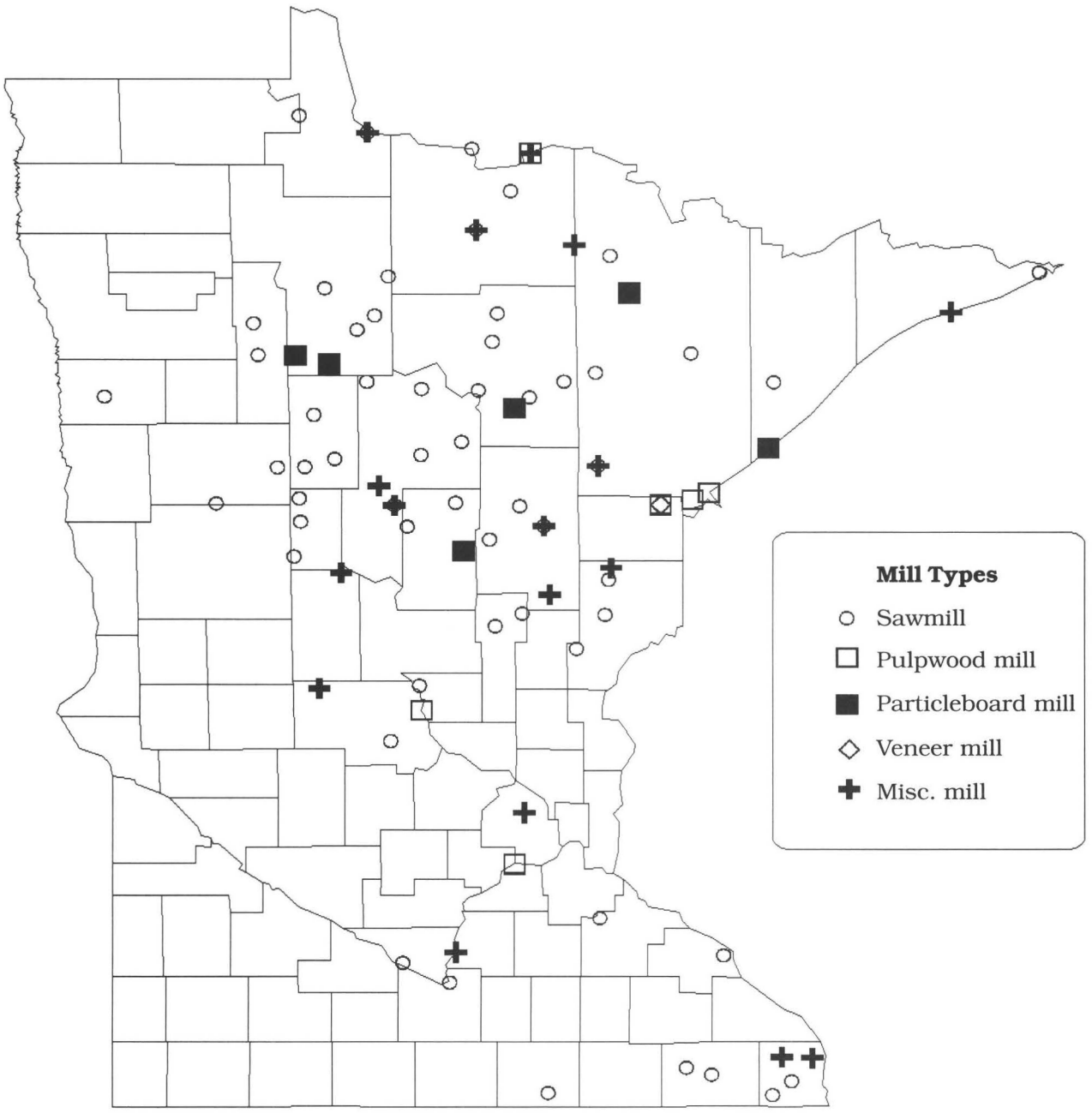

Figure 1.—*Primary mills processing 50 million cubic feet or more of roundwood per year, 1997.*

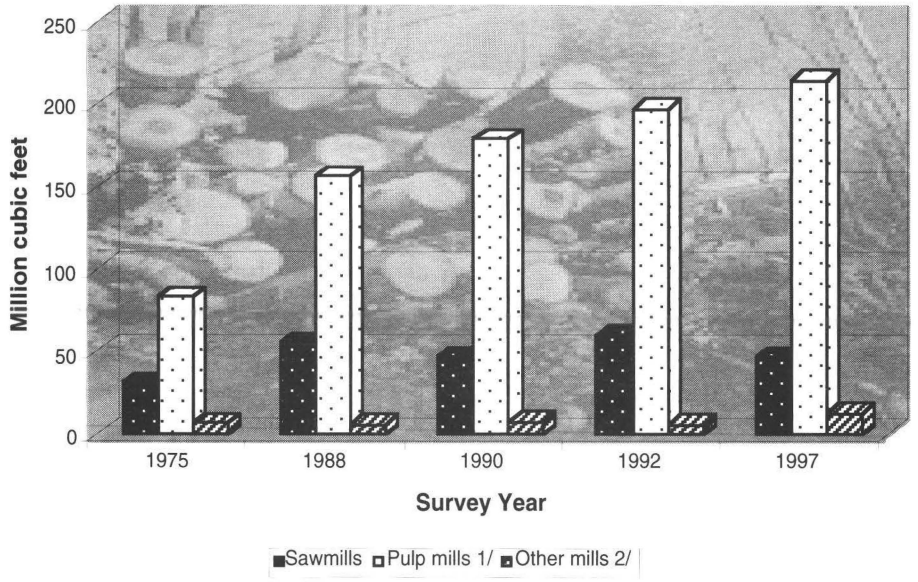

Figure 2.—*Industrial roundwood receipts by mill type, Minnesota, 1975-1997.*

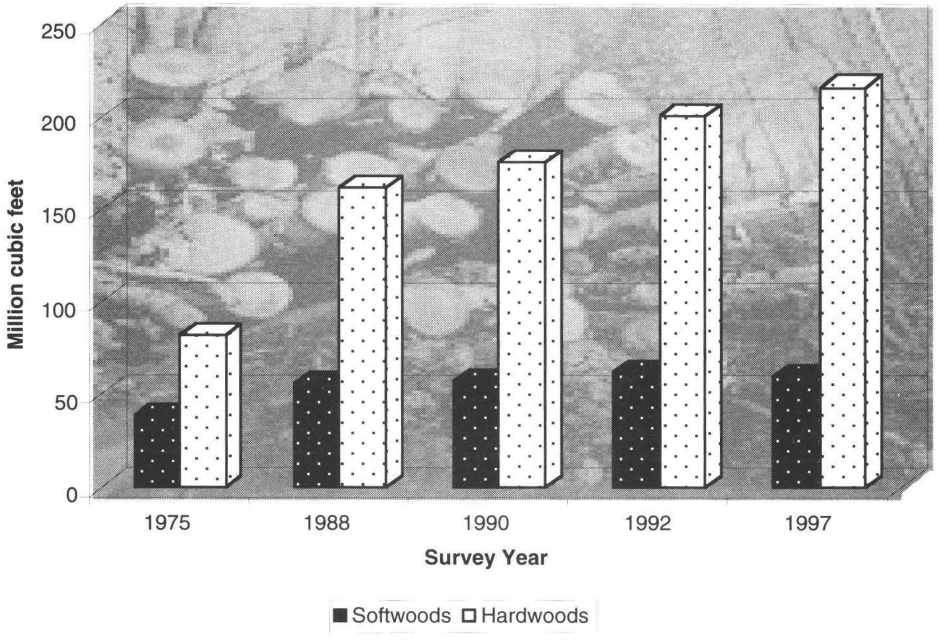

Figure 3.—*Industrial roundwood receipts by hardwood/softwood type, Minnesota, 1975-1997.*

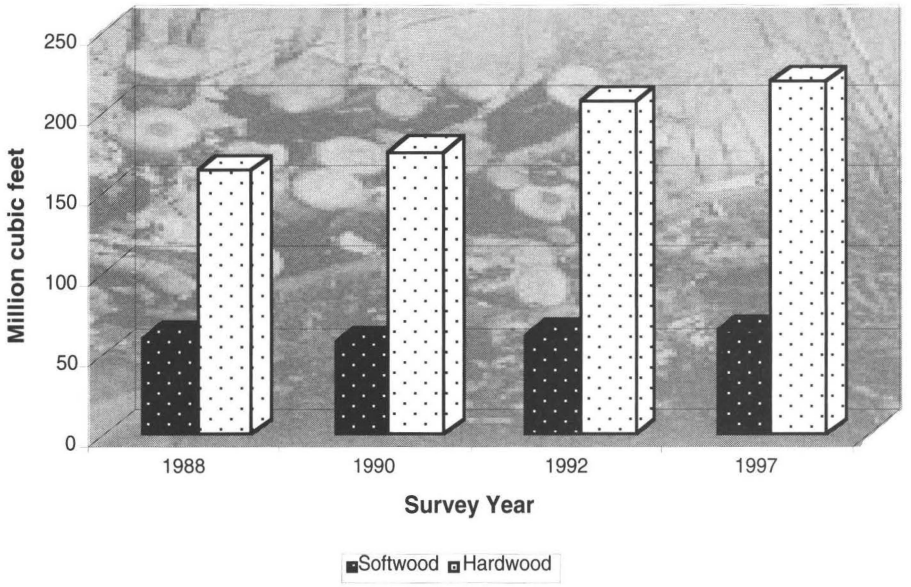

Figure 4.—*Industrial roundwood production by hardwood/ softwood type, Minnesota, 1988-1997.*

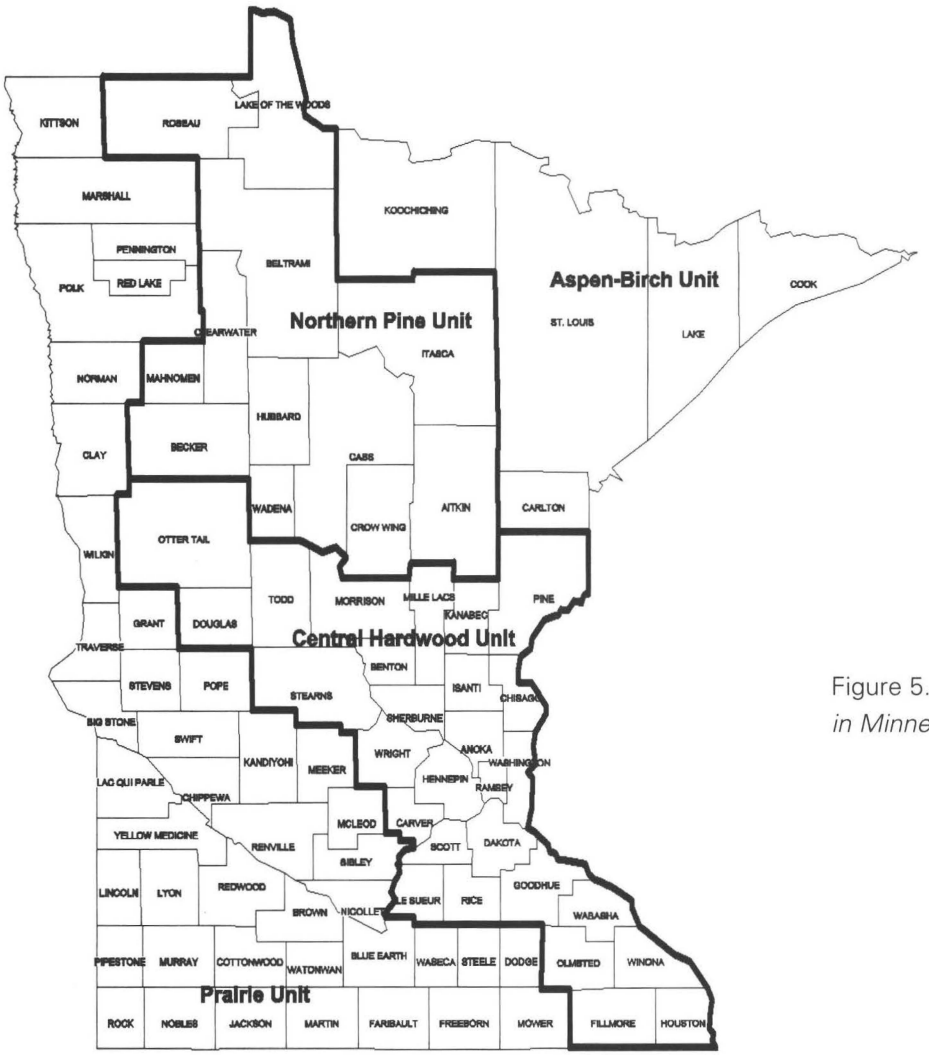

Figure 5.—*Forest Survey Units in Minnesota.*

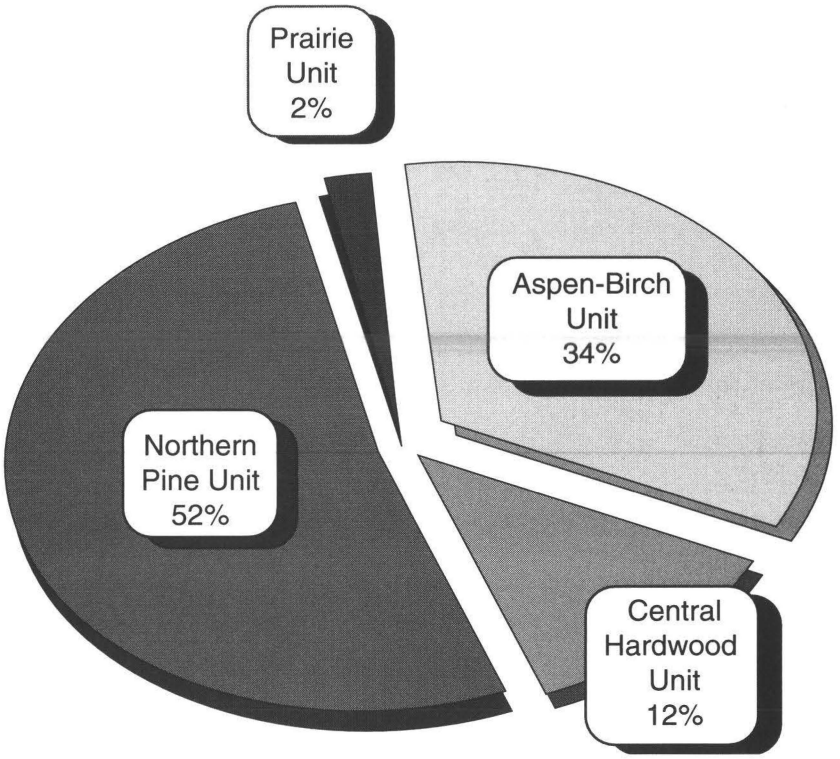

Figure 6.—*Industrial roundwood production by Forest Survey Unit, Minnesota, 1997.*

- Production of softwood roundwood was more evenly divided among four species groups: fir, jack pine, spruce, and red pine (table 3, fig. 7B).

- Pulpwood production from industrial roundwood accounted for 79 percent of the industrial roundwood production, and saw logs accounted for 19 percent (table 3, fig. 8).

PULPWOOD

- Minnesota produced nearly 3.0 million cords of pulpwood (including mill residues) in 1997 (tables 4, 5). Pulpwood includes all fiber-based products made from roundwood including particleboard, oriented strandboard (OSB), waferboard, and engineered lumber.

- Aspen roundwood accounted for 73 percent of the roundwood used for pulpwood production (tables 4, 5), nearly the same figure—74 percent—reported in 1992.

- In 1997, Minnesota exported 10 percent of its pulpwood to other States and Canada, a 4-percent increase from 1992. Most of this increase was due to an increase in softwood pulpwood production and a drop in softwood pulpwood consumption by Minnesota mills (table 5).

- Almost 98 percent of the wood fiber used to produce pulpwood came from roundwood (table 7), and the rest came from mill residues.

- The Northern Pine and Aspen-Birch Units were the top producing Survey Units for roundwood used for pulpwood in the State in 1997 with 1.5 million cords and 1.0 million cords, respectively (table 6).

- Nearly 95 percent of the wood fiber used to produce pulpwood was harvested from Minnesota forests (table 9).

SAW LOGS

- Total saw log production declined by 8 percent between 1992 and 1997 (table 10, fig. 9). Approximately half of this decline

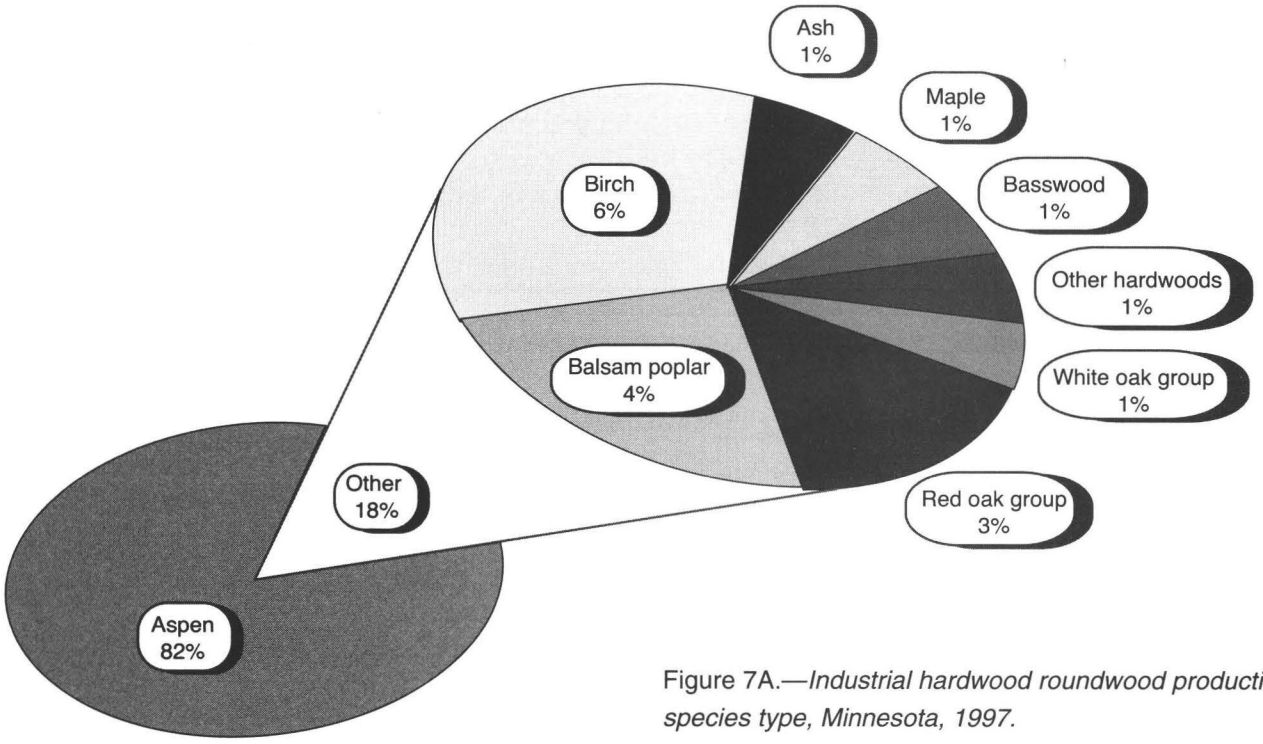

Figure 7A.—*Industrial hardwood roundwood production by species type, Minnesota, 1997.*

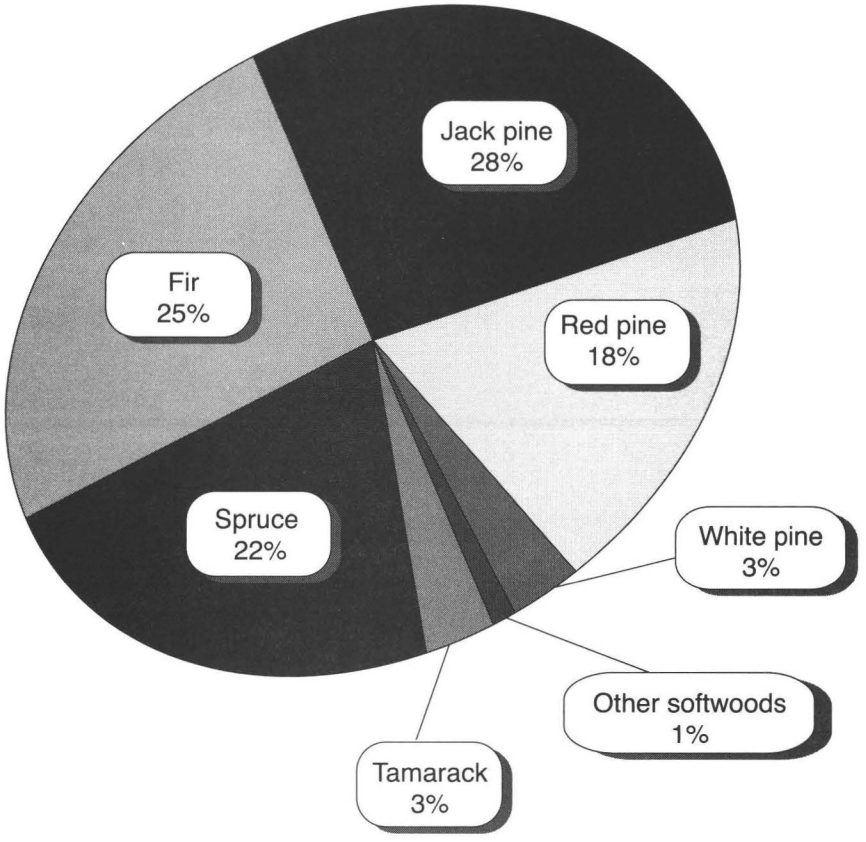

Figure 7B.—*Industrial softwood roundwood production by species type, Minnesota, 1997.*

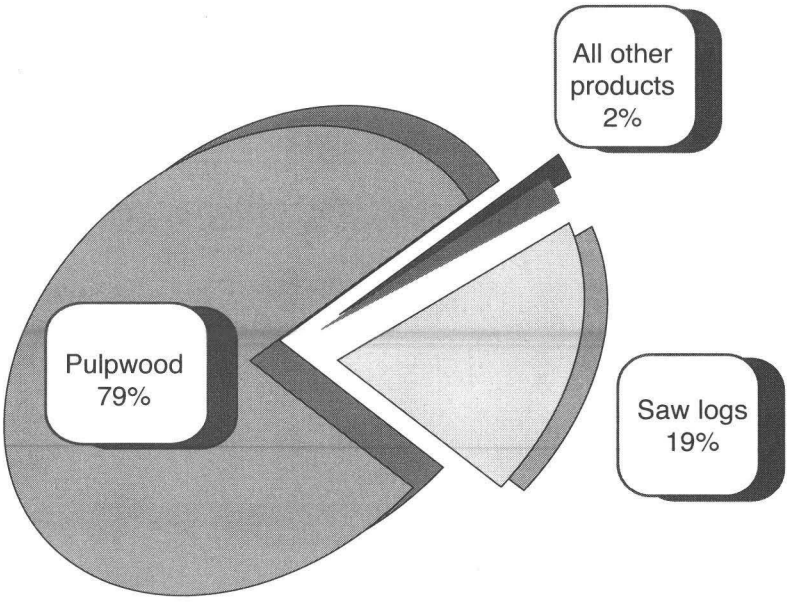

Figure 8.—*Industrial roundwood production by product type, Minnesota, 1997.*

was due to changes in reporting technique noted in the foreword of this publication. Hardwood saw log production fell by 12 percent although one-third of this drop was due to reporting technique changes. Most of the reduction in hardwood sawtimber production came from a reduction in aspen saw log production. Aspen production fell from 98 million board feet in 1992 to 71 million board feet (73 MMBF w/o reporting changes) in 1997.

- Softwood species accounted for 41 percent of Minnesota-produced saw logs while hardwoods accounted for 59 percent (table 10). Jack pine and red pine accounted for 46 percent and 35 percent, respectively, of the softwood saw log production. Aspen and the red oak group accounted for 41 percent and 21 percent, respectively, of the hardwood saw log production.

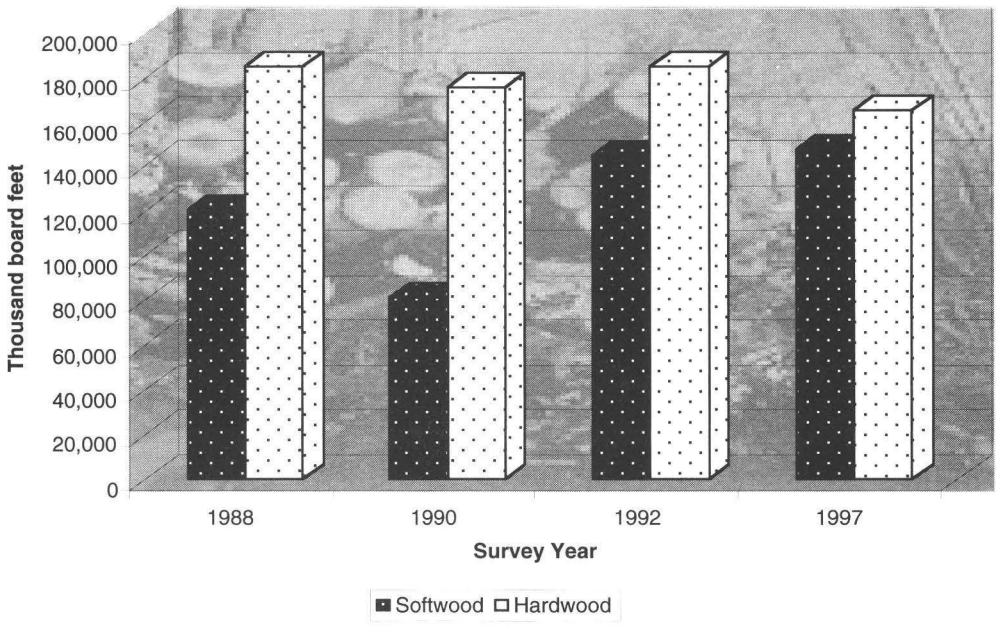

Figure 9.—*Saw log production by hardwood/softwood type, Minnesota, 1997.*

- Between 1992 and 1997, saw log receipts fell by 5 percent (table 10, fig. 10). However, most of this change was due to differences in reporting technique. If the saw log receipt volume from the excluded mills had been included in the calculations, saw log receipts would have fallen by only 1 percent. Softwood receipts would have risen by 5 percent and hardwood receipts would have fallen by 3 percent.

- Overall, 95 percent of Minnesota's domestically grown saw logs went to Minnesota mills. Minnesota exported only a small portion of its saw log production: 4 percent to Wisconsin and less than 1 percent combined to Iowa and Canadian mills (table 11).

- Minnesota imported 20 percent of the softwood saw logs processed by its mills and just over 2 percent of the hardwood saw logs. Overall, Minnesota imported 10 percent of the saw logs processed in its mills (table 13).

- Minnesota is a net importer of sawtimber. Imports of saw logs exceeded exports by 17,000 thousand board feet in 1997 (tables 11, 13; fig.11).

TREE UTILIZATION

- Tree utilization efficiency measures the amount of material harvested versus the amount processed at a primary mill. Expressed as a percentage, utilization efficiency varied among species from 72 percent for red pine to 52 percent for the red oak species group (table 19, fig. 14). The average utilization efficiency rate was 67 percent.

- During 1997, Minnesota loggers generated 142 million cubic feet of harvest residues, an increase of 15 percent over 1992 (table 22).

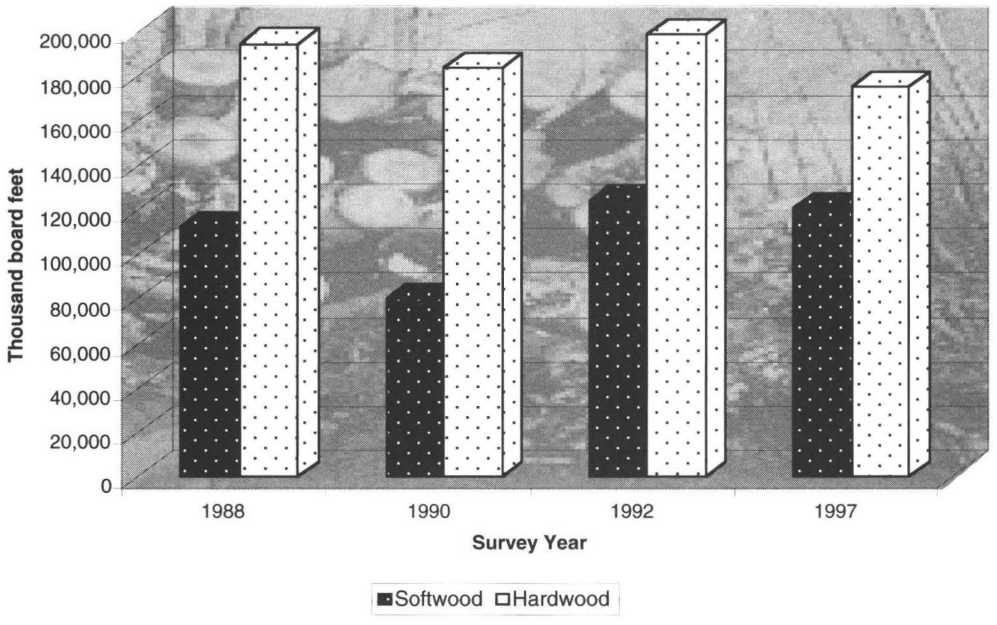

Figure 10.—*Saw log receipts by hardwood/softwood type, Minnesota, 1988-1997.*

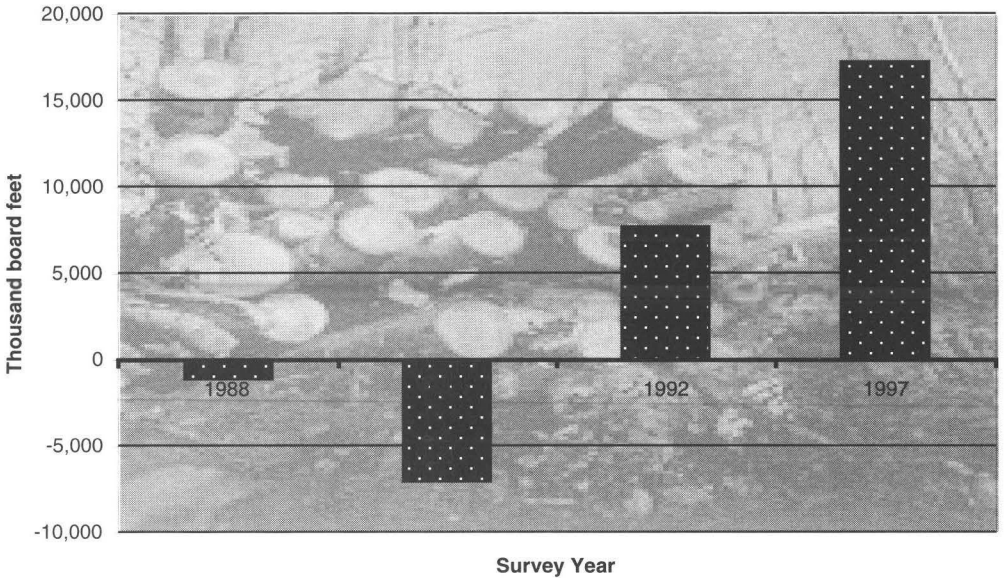

Figure 11.—*Net imports of saw logs by Minnesota mills, 1988-1997.*

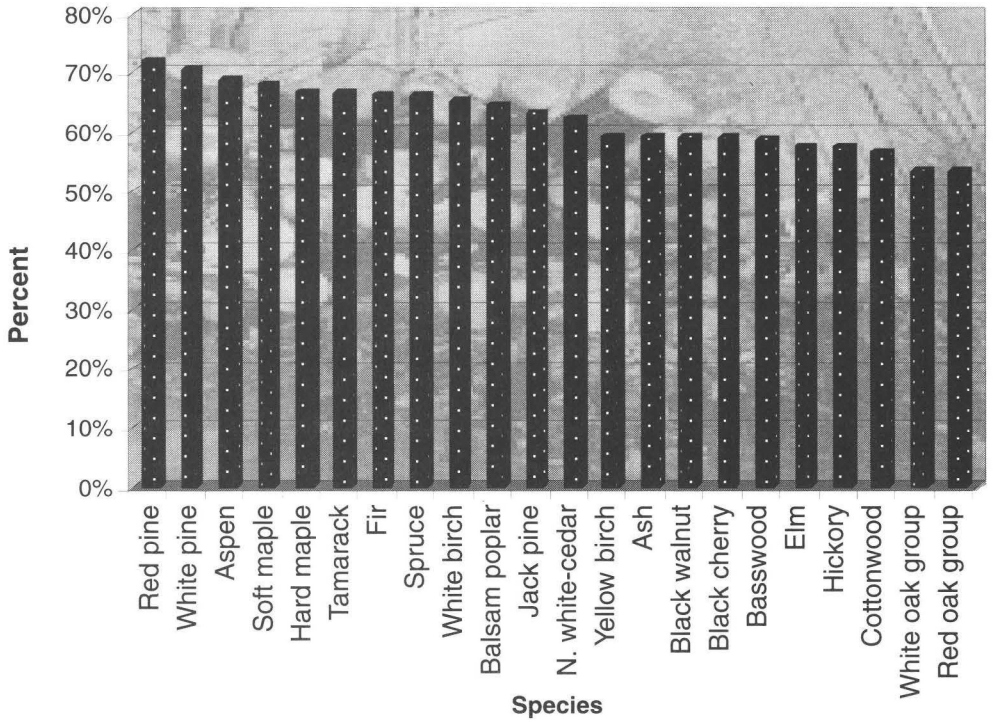

Figure 12.—Total percentage of material harvested that was processed by mills.

PRIMARY MILL RESIDUE

- During 1997, Minnesota primary wood-using mills generated a total of 2,952 thousand tons of mill residues: 1,037 thousand tons of coarse residues, 861 thousand tons of fine residues, and 1,053 thousand tons of bark (table 23).

- In 1997, as in 1992, 91 percent of all mill residues generated at Minnesota primary mills were used. The largest use of residues was for industrial fuel at 58 percent (table 23).

- Pulpwood mills used coarse residues primarily for fiber products (49 percent), followed by domestic fuel (19 percent), industrial fuel (16 percent), and miscellaneous uses (7 percent); and 10 percent of the coarse residues were not used (table 23).

- Fine residues were used mostly for indusrial fuel (56 percent), followed by miscellaneous uses (26 percent), domestic fuel (5 percent), and fiber products (<1 percent) (table 23). Twelve percent of fine residues were not used.

- Bark was used mainly for industrial fuel (82 percent), followed by miscellaneous uses (8 percent), domestic fuel (2 percent), and fiber products (<1 percent) (table 23). Eight percent of bark was not used.

LITERATURE CITED

Hackett, Ronald L.; Dahlman, Richard A. 1997. Minnesota timber industry—an assessment of timber product output and use, 1992. Resour. Bull. NC-186. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 60 p.

APPENDIX

STUDY METHODS

This study was a cooperative effort of the Minnesota Department of Natural Resources (MNDNR) and the North Central Research Station (NCRS). Using mail questionnaires supplied by NCRS and designed to determine the size and composition of Minnesota's primary wood-using mills, the MNDNR canvassed all primary wood-using mills within the State. The MNDNR then followed up with nonresponding mills through additional mailings, telephone calls, and personal contacts until it achieved a 100 percent response. Completed questionnaires were sent to NCRS for editing and processing.

As part of data editing and processing, all industrial roundwood volumes reported on the questionnaires were converted to standard units of measure using regional conversion factors. Timber removals by source of material and harvest residues generated during logging were estimated from standard product volumes using factors developed from logging utilization studies previously conducted by NCRS. Finalized data on Minnesota's industrial roundwood receipts were loaded into a regional timber removals database and supplemented with data on out-of-State uses of Minnesota's roundwood to provide a complete assessment of Minnesota's timber product output.

DEFINITION OF TERMS

Board foot

Unit of measure applied to roundwood. It relates to lumber that is 1 foot long, 1 foot wide, and 1 inch thick (or its volume equivalent).

Central stem

The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark or the point where the central stem breaks into limbs.

Coarse mill residue

Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial species

Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, Osage-orange, and redbud.)

Cull removals

Net volume of rough and rotten trees, plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards, harvested for industrial roundwood products.

Dead removals

Net volume of dead trees harvested for industrial roundwood products.

Diameter at breast height (d.b.h.)

The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Fine mill residue

Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest land

Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for non-forest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of land as forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a width of at least 120 feet, measured across the tree crowns, to qualify as forest land. Unimproved roads and trails or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Growing-stock removals
The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree
A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume
Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods
Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues
Total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial fuelwood
A roundwood product, with or without bark, used to generate energy at manufacturing facilities and schools, correctional institutions, or electric generating plants.

Industrial roundwood exports
The quantity of industrial roundwood harvested in a geographical area and transported to other geographical areas.

Industrial roundwood imports
The quantity of industrial roundwood received from other geographical areas.

Industrial roundwood products
Saw logs, pulpwood, veneer logs, poles, commercial posts, pilings, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production
The quantity of industrial roundwood harvested in a geographic area.

Industrial roundwood receipts
The quantity of industrial roundwood received by commercial mills in a geographic area.

Industrial roundwood retained
The quantity of industrial roundwood harvested from and processed by commercial mills within the same geographical area.

International 1/4-inch rule
A log rule or formula for estimating the board-foot volume of logs, allowing 1/2 inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In this form, 1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Limbwood removals
Net volume of all portions of a tree other than the central stem (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue
Net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash
Net volume of unused portions of the unmerchantable (non-growing-stock) sections of trees cut or killed by logging.

Merchantable sections
Sections of the central stem of growing-stock trees that meet either pulpwood or saw log specifications.

Net volume
Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species
Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products. Classified in volume tables as rough trees.

Nonforest land
Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land.) If intermingled in forest areas, improved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.

Nonforest land removals
Net volume of trees on nonforest lands harvested for industrial roundwood products.

Poletimber
A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals
Net volume in the merchantable central stem of poletimber trees harvested for industrial roundwood products.

Primary wood-using mills
Mills receiving roundwood or chips from roundwood for processing into products such as lumber, veneer, and pulp.

Primary wood-using mill residue
Wood materials (coarse and fine) and bark generated at manufacturing plants from roundwood processed into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some byproduct.

Rotten tree
A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree
A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood
Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling
A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals
Net volume in saplings harvested for industrial roundwood products.

Saw log
A log meeting minimum standards of diameter, length and defect, sound and straight, and with a minimum diameter outside bark of 7.0 inches for softwoods and 9.0 inches for hardwoods, or other combinations of size and defect specified by regional standards.

Saw log portion
That portion of the central stem of sawtimber trees between the stump and the saw log top.

Saw log top
The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches diameter outside bark (d.o.b.) for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber removals
As used in table 19, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber trees harvested for industrial roundwood products. (Note: Includes the saw log and upper stem portions of sawtimber trees.) In the case of sawtimber volume removed from the timberland inventory as in table 21, sawtimber removals refers to the net volume in the saw log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International 1/4-inch rule).

Sawtimber tree
A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

Softwoods
Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timber product output
The volume of roundwood products produced from an area's forests.

Timber removals
The total net volume of trees removed for industrial roundwood products or left on the ground as harvest residues.

Timberland
Forest land that is capable of producing in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

Tree
A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Upper stem portion
That portion of the central stem of sawtimber trees between the saw log top and the minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Veneer log
Logs to be used in the production of plywood, finished panels, or veneer sheets, both rotary cut and sliced.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS	
Jack pine	*Pinus banksiana*
Red pine	*Pinus resinosa*
Eastern white pine	*Pinus strobus*
Spruce	
White spruce	*Picea glauca*
Black spruce	*Picea mariana*
Balsam fir	*Abies balsamea*
Eastern hemlock	*Tsuga canadensis*
Tamarack	*Larix laricina*
Northern white-cedar	*Thuja occidentalis*
Eastern redcear	*Juniperis virginiana*
HARDWOODS	
White oak	
White oak	*Quercus alba*
Bur oak	*Quercus macrocarpa*
Chinkapin oak	*Quercus muehlenbergii*
Swamp white oak	*Quercus bicolor*
Red oak	
Northern red oak	*Quercus rubra*
Black oak	*Quercus velutina*
Northern pin oak	*Quercus ellipsoidalis*
Hickory	
Bitternut hickory	*Carya cordiformis*
Pignut hickory	*Carya glabra*
Shagbark hickory	*Carya ovata*
White birch	*Betula papyrifera*
Yellow birch	*Betula alleghaniensis*

Hard maple	
Black maple	*Acer nigrum*
Sugar maple	*Acer saccharum*
Soft maple	
Red maple	*Acer rubrum*
Silver maple	*Acer saccharinum*
American beech	*Fagus grandifolia*
Ash	
Black ash	*Fraxinus nigra*
White ash	*Fraxinus americana*
Green ash	*Fraxinus pennsylvanica*
Balsam poplar	*Populus balsamifera*
Aspen	
Bigtooth aspen	*Populus grandidentata*
Quaking aspen	*Populus tremuloides*
Eastern cottonwood	*Populus deltoides*
American basswood	*Tilia americana*
Black walnut	*Juglans nigra*
Elm	
American elm	*Ulmus americana*
Rock elm	*Ulmus thomasii*
Slippery elm	*Ulmus rubra*
Other hardwoods	
Northern catalpa	*Catalpa speciosa*
Black cherry	*Prunus serotina*
River birch	*Betula nigra*
Black locust	*Robinia pseudoacacia*
Honeylocust	*Gleditsia triacanthos*
Red mulberry	*Morus rubra*
Butternut	*Juglans cineria*
Black willow	*Salix nigra*
Boxelder	*Acer negundo*
Hackberry	*Celtis occidentalis*

TABLE TITLES

Table 1.—*Number of active primary wood-using mills in Minnesota, 1975, 1988, 1990, 1992, 1997*

Table 2.—*Industrial roundwood receipts by type of mill in Minnesota, 1975, 1988, 1990, 1992, 1997*

Table 3.—*Industrial roundwood production by Forest Survey Unit, species group, and type of product, Minnesota, 1997*

Table 4.—*Minnesota pulpwood production by year, product form, and species group, 1946-1997*

Table 5.—*Minnesota pulpwood production by species group and destination, 1997*

Table 6.—*Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

Table 7.—*Pulpwood receipts in Minnesota by year, product form, and species group, 1946-1997*

Table 8.—*Pulpwood receipts in Minnesota by area of origin, 1960-1997*

Table 9.—*Pulpwood receipts in Minnesota by product form, species group, and area of origin, 1997*

Table 10.—*Saw log production and receipts in Minnesota by species group 1992 and 1997*

Table 11.—*Saw log production by Forest Survey Unit, species group, and State of destination, Minnesota, 1997*

Table 12.—*Saw log production by Forest Survey Unit, county, and species group, Minnesota, 1997*

Table 13.—*Saw log receipts in Minnesota by Forest Survey Unit, species group, and State of origin, 1997*

Table 14.—*Veneer log and bolt production and receipts in Minnesota for selected years, 1960-1997*

Table 15.—*Veneer log and bolt production and receipts by species group in Minnesota, 1992 and 1997*

Table 16.—*Veneer log and bolt production by species group and State or country of destination, Minnesota, 1997*

Table 17.—*Pole production by Forest Survey Unit, species group, Minnesota, 1997*

Table 18.—*Post production by Forest Survey Unit and species group, Minnesota, 1997*

Table 19.—*Wood material harvested for industrial roundwood by Forest Survey Unit, source of material, and species group, Minnesota, 1997*

Table 20.—*Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

Table 21.—*Sawtimber removals from timberland for industial roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

Table 22.—*Harvest residues generated by industrial roundwood harvested by Forest Survey Unit, county, and species group, Minnesota, 1992*

Table 23.—*Residue produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Minnesota, 1997*

TABLES

Table 1.--*Number of active primary wood-using mills in Minnesota 1975, 1988, 1990, 1992, 1997*

Kind of mill	1975	1988	1990	1992	1997
Sawmills					
Large [1]	9	14	12	15	12
Medium [2]	29	57	52	43	39
Small [3]	583	602	457	510	275 [5]
Total	620	673	521	568	326
Pulp mills [4]	9	15	15	16	16
Veneer mills	4	4	1	1	8
Other mills	17	37	35	11	46
Total	650	729	572	596	396

[1] *Annual lumber production in excess of 5 million board feet annually.*

[2] *Annual lumber production from 1 to 5 million board feet annually.*

[3] *Annual lumber production less than 1 million board feet annually.*

[4] *Includes particleboard and engineered lumber plants.*

[5] *Reflects changes in reporting techniques as described in Forward.*

Table 2.--*Industrial roundwood receipts by type of mill in Minnesota 1975, 1988, 1990, 1992, 1997*

(*In million cubic feet*)

Kind of mill	1975	1988	1990	1992	1997	Percent change from 1992 to 1997
Softwoods						
Sawmills	9.7	22.4	14.8	27.6	23.3	-15.58% [3]
Pulp mills [1]	28.8	33.3	41.1	33.9	30.7	-9.44%
Other mills [2]	0.3	0.9	2.5	1.5	6.6	340.00%
Total	38.8	56.6	58.4	63	60.5	-3.97%
Hardwoods						
Sawmills	21.2	33.3	32.5	32.5	24.6	-24.31% [3]
Pulp mills [1]	55	123.1	138	164.1	184.6	12.49%
Other mills [2]	6.3	5.5	5.4	4.6	7.2	56.52%
Total	82.5	161.9	175.9	201.1	216.4	7.61%
All species						
Sawmills	30.9	55.7	47.3	60.1	47.9	-20.30% [3]
Pulp mills [1]	83.8	156.4	179.1	198	215.3	8.74%
Other mills [2]	6.6	6.4	7.9	6	13.7	128.33%
Total	121.3	218.5	234.3	264.1	276.9	4.85%

[1] *Includes paper, paperboard, particleboard, and engineered lumber mills.*

[2] *Does not include treating plants or residential fuelwood receipts.*

[3] *Reflects changes in reporting techniques as discribed in forward.*

Table 3.--*Industrial roundwood production by Forest Survey Unit, species group, and type of product, Minnesota, 1997* [1]

ALL UNITS

Species group	Saw logs		Veneer logs		Pulpwood		Poles		Posts		Excelsior/ shavings	Other products	All products
	MBF [2]	*MCF* [3]	*MBF* [2]	*MCF* [3]	*Cords* [4]	*MCF* [3]	*Pieces*	*MCF* [3]	*M pieces*	*MCF* [3]	*MCF* [3]	*MCF* [3]	*MCF* [3]
Softwoods													
Fir	5,026	1,015	--	--	194,841	15,276	--	--	--	--	--	--	16,291
Redcedar	60	12	--	--	--	--	--	--	--	--	--	--	12
Tamarack	156	31	--	--	21,137	1,657	--	--	--	--	--	--	1,689
Spruce	6,180	1,248	--	--	168,472	13,209	--	--	--	--	--	--	14,457
Jack pine	56,024	11,317	--	--	85,628	6,713	35,370	212	6	4	78	0	18,325
Red pine	42,223	7,279	--	--	39,067	3,079	238,040	1,428	102	82	--	24	11,892
White pine	9,006	1,553	--	--	1,500	118	--	--	--	--	--	--	1,671
N. white-cedar	1,970	398	--	--	--	--	8,490	47	--	--	--	--	445
Other softwoods	496	100	--	--	--	--	--	--	--	--	--	--	100
Total	121,141	22,954	--	--	510,644	40,052	281,900	1,687	108	86	78	24	64,881
Hardwoods													
Soft maple	2,172	356	122	20	6,634	524	--	--	--	--	--	--	899
Hard maple	2,653	434	674	110	8,154	643	--	--	--	--	--	--	1,188
White birch	4683	767	9	2	122,750	9,674	--	--	--	--	--	--	10,443
Yellow birch	15,986	2,619	6,090	991	--	--	--	--	--	--	--	--	3,610
Other/Unknown birch	3	0	--	--	--	--	--	--	--	--	--	--	0
Hickory	373	61	--	--	34	3	--	--	--	--	--	--	64
Hackberry	24	4	--	--	--	--	--	--	--	--	--	--	4
Ash	5,723	937	515	84	3,390	267	--	--	--	--	--	--	1,289
Butternut	26	4	--	--	--	--	--	--	--	--	--	--	4
Black walnut	496	81	164	27	--	--	--	--	--	--	--	--	108
Cottonwood	4,751	778	14	2	1	0	--	--	--	--	--	0	781
Balsam poplar	956	157	--	--	112,145	8,837	--	--	--	--	--	--	8,993
Aspen	71,456	12,869	4,302	700	2,108,216	165,941	--	--	--	--	395	0	179,906
Black cherry	325	53	102	17	--	--	--	--	--	--	--	--	70
Other/Unknown cherry	--	--	--	--	44	4	--	--	--	--	--	--	4
Red oak group	36,263	6,701	352	57	899	71	--	--	--	--	--	0	6,830
White oak group	10,932	2,020	523	85	65	5	--	--	--	--	--	0	2,110
Willow	21	3	--	--	--	--	--	--	--	--	--	--	3
Basswood	12,452	2,040	2,109	343	2,364	186	--	--	--	--	--	--	2,569
Elm	990	162	61	10	37	3	--	--	--	--	--	--	175
Other hardwoods	5,119	838	--	--	44	4	--	--	--	--	--	0	842
Total	175,404	30,887	15,038	2,448	2,364,778	186,162	--	--	--	--	395	0	219,892
All species	296,545	53,841	15,038	2,448	2,875,422	226,213	281,900	1,687	108	86	473	24	284,773

ASPEN-BIRCH UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Poles		Posts		Excelsior/ shavings	Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]	MCF [3]	MCF [3]
Softwoods													
Fir	2,944	595	--	--	105,885	8,302	--	--	--	--	--	--	8,896
Redcedar	18	4	--	--	--	--	--	--	--	--	--	--	4
Tamarack	56	11	--	--	12,350	968	--	--	--	--	--	--	979
Spruce	4,566	922	--	--	122,869	9,633	--	--	--	--	--	--	10,556
Jack pine	13,242	2,675	--	--	29,586	2,320	17,690	106	--	--	--	--	5,101
Red pine	11,159	1,924	--	--	4,772	376	41,820	251	--	--	--	--	2,551
White pine	3,811	657	--	--	286	23	--	--	--	--	--	--	680
N. white-cedar	1,562	316	--	--	--	--	8,490	47	--	--	--	--	362
Other softwoods	250	51	--	--	--	--	--	--	--	--	--	--	51
Total	37,607	7,154	--	--	275,748	21,621	68,000	404	--	--	--	--	29,179
Hardwoods													
Soft maple	86	14	--	--	3,034	240	--	--	--	--	--	--	254
Hard maple	39	6	24	4	6,065	478	--	--	--	--	--	--	489
White birch	4,471	732	7	1	60,299	4,753	--	--	--	--	--	--	5,486
Yellow birch	8,550	1,400	4,263	694	--	--	--	--	--	--	--	--	2,095
Other/Unknown birch	3	0	--	--	--	--	--	--	--	--	--	--	0
Hickory	--	--	--	--	11	1	--	--	--	--	--	--	1
Ash	766	125	20	3	1,779	140	--	--	--	--	--	--	269
Cottonwood	--	--	--	--	0	0	--	--	--	--	--	--	0
Balsam poplar	517	85	--	--	49,172	3,875	--	--	--	--	--	--	3,959
Aspen	22,880	4,121	2,962	482	649,397	51,115	--	--	--	--	--	--	55,718
Other/Unknown cherry	--	--	--	--	15	1	--	--	--	--	--	--	1
Red oak group	176	33	--	--	275	22	--	--	--	--	--	--	54
White oak group	92	17	--	--	12	1	--	--	--	--	--	--	18
Basswood	698	114	0	0	88	7	--	--	--	--	--	--	121
Elm	--	--	--	--	12	1	--	--	--	--	--	--	1
Other hardwoods	103	17	--	--	15	1	--	--	--	--	--	--	18
Total	38,381	6,665	7,277	1,185	770,175	60,635	--	--	--	--	--	--	68,485
All species	75,988	13,819	7,277	1,185	1,045,923	82,256	68,000	404	--	--	--	--	97,663

(table 3 continued on next page)

(table 3 continued)

CENTRAL HARDWOOD UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Poles		Posts		Excelsior/ shavings	Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]	MCF [3]	MCF [3]
Softwoods													
Fir	0	0	--	--	10,335	811	--	--	--	--	--	--	811
Redcedar	35	7	--	--	--	--	--	--	--	--	--	--	7
Tamarack	13	3	--	--	731	57	--	--	--	--	--	--	60
Spruce	13	3	--	--	2,701	212	--	--	--	--	--	--	215
Jack pine	1,276	258	--	--	6,812	534	--	--	--	--	--	--	792
Red pine	3,660	631	--	--	18,451	1,454	--	--	--	--	--	--	2,085
White pine	624	108	--	--	336	26	--	--	--	--	--	--	134
Other softwoods	20	4	--	--	--	--	--	--	--	--	--	--	4
Total	5,641	1,013	--	--	39,366	3,094	--	--	--	--	--	--	4,107
Hardwoods													
Soft maple	793	130	70	11	2,816	222	--	--	--	--	--	--	364
Hard maple	1,706	279	194	32	1,941	153	--	--	--	--	--	--	464
White birch	17	3	0	0	7,883	622	--	--	--	--	--	--	625
Yellow birch	470	77	305	50	--	--	--	--	--	--	--	--	127
Hickory	333	54	--	--	23	2	--	--	--	--	--	--	56
Hackberry	24	4	--	--	--	--	--	--	--	--	--	--	4
Ash	1,583	259	74	12	467	37	--	--	--	--	--	--	308
Butternut	26	4	--	--	--	--	--	--	--	--	--	--	4
Black walnut	238	39	135	22	--	--	--	--	--	--	--	--	61
Cottonwood	2,595	425	14	2	0	0	--	--	--	--	--	--	427
Balsam poplar	4	1	--	--	1,244	98	--	--	--	--	--	--	99
Aspen	8,905	1,604	282	46	221,847	17,472	--	--	--	--	79	--	19,201
Black cherry	215	35	102	17	--	--	--	--	--	--	--	--	52
Other/Unknown cherry	--	--	--	--	30	2	--	--	--	--	--	--	2
Red oak group	24,266	4,484	183	30	624	49	--	--	--	--	--	--	4,563
White oak group	8,686	1,605	351	57	53	4	--	--	--	--	--	--	1,666
Willow	11	2	--	--	--	--	--	--	--	--	--	--	2
Basswood	4,088	670	1,190	194	292	23	--	--	--	--	--	--	886
Elm	861	141	57	9	25	2	--	--	--	--	--	--	152
Other hardwoods	1,156	189	--	--	30	2	--	--	--	--	--	--	192
Total	55,978	10,006	2,956	481	237,275	18,689	--	--	--	--	79	--	29,256
All species	61,619	11,019	2,956	481	276,641	21,784	--	--	--	--	79	--	33,363

NORTHERN PINE UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Poles		Posts		Excelsior/ shavings	Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]	MCF [3]	MCF [3]
Softwoods													
Fir	2,081	420	--	--	78,621	6,164	--	--	--	--	--	--	6,584
Tamarack	84	17	--	--	8,056	632	--	--	--	--	--	--	649
Spruce	1,578	319	--	--	42,902	3,363	--	--	--	--	--	--	3,682
Jack pine	41,499	8,387	--	--	49,229	3,860	17,680	106	6	4	78	--	12,431
Red pine	27,389	4,722	--	--	15,844	1,249	196,220	1177	102	82	--	24	7,253
White pine	4,571	788	--	--	878	69	--	--	--	--	--	--	857
N. white-cedar	408	82	--	--	--	--	--	--	--	--	--	--	82
Other softwoods	202	41	--	--	--	--	--	--	--	--	--	--	41
Total	77,812	14,772	--	--	195,530	15,336	213,900	1283	108	86	78	24	31,580
Hardwoods													
Soft maple	865	142	26	4	784	62	--	--	--	--	--	--	208
Hard maple	721	118	49	8	148	12	--	--	--	--	--	--	138
White birch	195	32	1	0	54,539	4,298	--	--	--	--	--	--	4,330
Yellow birch	6,958	1,140	1,523	248	--	--	--	--	--	--	--	--	1,388
Ash	2,766	453	254	41	1,144	90	--	--	--	--	--	--	585
Black walnut	32	5	--	--	--	--	--	--	--	--	--	--	5
Cottonwood	201	33	--	--	--	--	--	--	--	--	--	--	33
Balsam poplar	435	71	--	--	60,029	4,730	--	--	--	--	--	--	4,802
Aspen	39,427	7,101	1,058	172	1,186,905	93,413	--	--	--	--	316	--	101,002
Black cherry	16	3	1	0	--	--	--	--	--	--	--	--	3
Red oak group	10,523	1,945	3	0	--	--	--	--	--	--	--	--	1,945
White oak group	1,448	268	0	0	--	--	--	--	--	--	--	--	268
Basswood	7,116	1,166	86	14	1,984	156	--	--	--	--	--	--	1,336
Elm	33	5	--	--	--	--	--	--	--	--	--	--	5
Other hardwoods	3,547	581	--	--	--	--	--	--	--	--	--	--	581
Total	74,282	13,062	3,000	488	1,305,532	102,761	--	--	--	--	316	--	116,627
All species	152,094	27,834	3,000	488	1,501,063	118,097	213,900	1214	108	86	394	24	148,207

(table 3 continued on next page)

(table 3 continued)

PRAIRIE UNIT

Species group	Saw logs		Veneer logs		Pulpwood		Poles		Posts		Excelsior/ shavings	Other products	All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]	MCF [3]	MCF [3]
Softwoods													
Redcedar	7	1	--	--	--	--	--	--	--	--	--	--	1
Tamarack	3	1	--	--	--	--	--	--	--	--	--	--	1
Spruce	23	5	--	--	--	--	--	--	--	--	--	--	5
Jack pine	8	2	--	--	--	--	--	--	--	--	--	--	2
Red pine	15	3	--	--	--	--	--	--	--	--	--	--	3
Other softwoods	25	5	--	--	--	--	--	--	--	--	--	--	5
Total	81	16	--	--	--	--	--	--	--	--	--	--	16
Hardwoods													
Soft maple	428	70	26	4	--	--	--	--	--	--	--	--	74
Hard maple	186	30	407	66	--	--	--	--	--	--	--	--	97
White birch	--	--	--	--	30	2	--	--	--	--	--	--	2
Yellow birch	8	1	--	--	--	--	--	--	--	--	--	--	1
Hickory	40	7	--	--	--	--	--	--	--	--	--	--	7
Ash	608	100	167	27	--	--	--	--	--	--	--	--	127
Black walnut	226	37	29	5	--	--	--	--	--	--	--	--	42
Cottonwood	1,955	320	--	--	--	--	--	--	--	--	--	--	320
Balsam poplar	--	--	--	--	1,699	134	--	--	--	--	--	--	134
Aspen	245	44	--	--	50,067	3,940	--	--	--	--	--	--	3,984
Black cherry	94	15	--	--	--	--	--	--	--	--	--	--	15
Red oak group	1,298	240	167	27	--	--	--	--	--	--	--	--	267
White oak group	706	130	172	28	--	--	--	--	--	--	--	--	158
Willow	10	2	--	--	--	--	--	--	--	--	--	--	2
Basswood	549	90	833	136	--	--	--	--	--	--	--	--	226
Elm	96	16	4	1	--	--	--	--	--	--	--	--	16
Other hardwoods	314	51	--	--	--	--	--	--	--	--	--	--	51
Total	6,762	1,154	1,804	294	51,796	4,077	--	--	--	--	--	--	5,524
All species	6,843	1,170	1,804	294	51,796	4,077	--	--	--	--	--	--	5,540

[1] *Based on utilization studies in the region.*

[2] *Thousand board feet, International 1/4-inch rule.*

[3] *Thousand cubic feet.*

[4] *Standard cords are 128 cubic feet of wood and 49 cubic feet of bark and air space.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 4.--*Minnesota pulpwood production by year, product form, and speceis group, 1946-1997*

(*In thousand standard cords, unpeeled*) [1]

Year	Total	Roundwood								Residue	
		Pine	Balsam fir	Cedar	Spruce	Tamarack	Aspen	Birch	Other	Softwoods	Hardwoods
1946	977	333	93	--	258	19	265	1	--	3	5
1947	852	266	119	--	225	18	221	--	--	1	2
1948	988	286	150	--	269	5	276	2	--	--	--
1949	606	163	117	--	190	3	133	--	--	--	--
1950	748	187	126	--	185	1	248	--	1	--	--
1951	1,077	340	153	--	280	18	283	1	2	--	--
1952	937	194	163	--	293	13	270	2	2	--	--
1953	813	218	101	--	215	6	268	1	4	--	--
1954	837	214	118	--	237	7	254	1	6	--	--
1955	886	218	120	--	265	8	266	4	5	--	--
1956	1,067	259	140	--	287	14	353	5	9	--	--
1957	1,049	223	173	--	345	18	277	7	6	--	--
1958	903	198	116	--	241	14	324	2	8	--	--
1959	994	239	130	--	220	11	381	1	12	--	--
1960	1,048	225	145	--	256	19	392	1	10	--	--
1961	968	206	111	--	240	8	368	1	34	--	--
1962	979	201	110	--	217	9	406	2	34	--	--
1963	1,063	208	102	--	255	13	433	--	51	--	1
1964	1,063	204	90	--	256	12	451	--	45	--	5
1965	1,018	181	74	--	237	12	468	--	41	1	4
1966	1,174	256	80	--	172	7	612	1	31	2	13
1967	1,205	202	76	--	218	40	591	3	39	7	29
1968	1,087	203	43	--	157	26	583	1	22	16	36
1969	1,192	237	40	--	154	21	660	3	32	5	40
1970	1,224	221	45	--	181	36	600	31	27	17	66
1971	1.196	214	40	--	168	32	607	34	31	22	48
1972	1,354	216	66	--	192	31	689	42	30	25	63
1973	1,377	205	66	--	215	32	673	42	36	26	82
1974	1,578	239	92	--	207	43	804	44	37	35	77
1975	1,359	199	121	--	202	56	616	35	22	44	64
1976	1,309	172	74	--	176	37	673	46	32	33	66
1977	1,333	174	99	--	153	42	697	30	25	35	78
1978	1,338	186	96	--	164	31	704	9	39	35	74
1979 [2]	1,458	158	117	--	153	36	838	7	31	43	75

1980	1,333	150	111	--	170	43	699	15	48	34	63
1981	1,370	147	101	--	127	30	801	11	53	39	61
1982	1,484	179	106	--	133	45	866	3	59	49	44
1983	1,910	140	90	--	95	26	1,392	4	69	55	39
1984	2,151	189	146	--	118	12	1,529	3	62	47	45
1985	1,880	137	122	--	111	9	1,361	2	48	47	43
1986	1,979	139	101	--	98	13	1,469	10	46	46	57
1987	2,078	111	112	--	101	8	1,578	13	41	54	60
1988	2,131	121	170	--	146	11	1,501	13	55	57	57
1989	2,264	132	198	--	163	5	1,610	23	54	29	50
1990	2,359	137	197	4	180	4	1,658	23	73	27	56
1991	2,393	163	197	--	141	4	1,698	14	90	30	56
1992	2,671	136	187	--	146	1	1,985	25	104	27	60
1993	2,857	156	199	--	158	3	2,185	42	115	34	76
1994	2,858	120	185	--	165	3	2,155	75	154	102	68
1995	2,810	122	198	--	150	12	2,103	111	114	63	98
1996	2,897	119	252	--	204	13	2,098	109	101	63	105
1997	2,875	126	195	--	168	21	2,108	123	133	38	66

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Pulpwood includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.*

Table 5.--*Minnesota pulpwood production by species group and destination, 1997*

(*In thousand standard cords, unpeeled*) [1]

Class of material and species group	Total	Destination		
		Minnesota	Wisconsin	Canada
Roundwood				
Softwoods				
Balsam fir	194,841	190,063	4,778	--
Jack pine	85,628	44,906	40,722	--
Red pine	39,067	27,802	11,265	--
White pine	1,500	1,207	293	--
Spruce	168,472	111,681	56,790	--
Tamarack	21,137	1,880	19,257	--
Total	510,644	377,539	133,105	--
Hardwoods				
Ash	3,390	1,026	2,364	--
Aspen	2,108,216	2,019,832	88,384	--
Balsam poplar	112,145	111,004	1,141	--
Basswood	2,364	1,984	380	--
White birch	122,750	79,725	43,025	--
Cottonwood	1	--	1	--
Elm	37	--	37	--
Hickory	34	--	34	--
Hard maple	8,154	3,253	4,901	--
Soft maple	6,634	4,260	2,373	--
Red oak	899	--	899	--
White oak	65	--	65	--
Other hardwoods	89	--	89	--
Total	2,364,778	2,221,084	143,694	--
Total roundwood	2,875,422	2,598,623	276,799	--
Residues [2]				
Softwood	37,792	18,656	--	19,137
Hardwood	66,383	36,380	10,576	19,427
Total	104,176	55,036	10,576	38,564
All material	2,979,598	2,653,659	287,375	38,564

[1] *128 cubic feet consisting of 79 cubic feet of wood, and 49 cubic feet of bark and air space.*

[2] *Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.*

Rows and columns may not sum due to rouding.

Table 6.--*Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

(*In standard cords, unpeeled*) [1]

Forest Survey Unit and county [2]	All species	Species group																		
		Balsam fir	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood	White birch	Cottonwood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwood
Aspen-Birch																				
Carlton	42,186	1,122	817	821	--	2,376	32	296	26,292	738	88	7,953	0	12	11	608	711	264	12	30
Cook	53,414	2,492	2,524	492	21	6,490	319	--	39,034	--	--	2,043	--	--	--	--	--	--	--	--
Koochiching	337,022	31,276	8,221	178	--	41,294	5,713	78	221,850	25,352	--	2,904	--	--	--	26	130	--	--	--
Lake	93,158	11,589	3,405	835	11	18,219	990	1,044	34,641	8,799	--	12,219	--	--	--	1,405	--	--	--	--
St. Louis	520,144	59,406	14,619	2,446	254	54,491	5,296	361	327,578	14,284	--	35,181	--	--	--	4,026	2,192	10	--	--
Total	1,045,923	105,885	29,586	4,772	286	122,869	12,350	1,779	649,397	49,172	88	60,299	0	12	11	6,065	3,034	275	12	30
Northern Pine																				
Aitkin	98,683	4,874	1,226	1,073	24	2,239	1,266	--	81,099	980	--	5,794	--	--	--	108	--	--	--	--
Becker	82,974	730	382	22	--	9	--	--	78,682	996	--	2,154	--	--	--	--	--	--	--	--
Beltrami	209,566	5,053	3,094	2,471	--	3,721	1,076	844	164,648	17,323	1,135	9,661	--	--	--	--	540	--	--	--
Cass	212,375	6,019	9,388	4,913	779	3,294	1,183	--	171,118	4,864	63	10,753	--	--	--	--	--	--	--	--
Clearwater	92,017	2,121	1,270	26	--	1,405	56	103	79,275	4,189	786	2,786	--	--	--	--	--	--	--	--
Crow Wing	90,740	871	7,015	2,851	41	848	50	--	74,661	1,070	--	3,334	--	--	--	--	--	--	--	--
Hubbard	143,903	567	2,863	418	--	407	120	79	129,220	3,083	--	7,099	--	--	--	--	48	--	--	--
Itasca	393,028	54,440	9,126	3,012	35	21,364	1,689	118	273,602	16,601	--	12,808	--	--	--	40	196	--	--	--
Lake of the Woods	114,396	3,608	6,032	28	--	7,409	1,217	--	87,937	8,131	--	33	--	--	--	--	--	--	--	--
Mahnomen	13,789	--	--	--	--	60	--	--	13,646	69	--	14	--	--	--	--	--	--	--	--
Roseau	25,181	336	2,816	--	--	2,146	1,371	--	15,850	2,653	--	8	--	--	--	--	--	--	--	--
Wadena	24,410	--	6,017	1,030	--	--	29	--	17,168	71	--	95	--	--	--	--	--	--	--	--
Total	1,501,063	78,621	49,229	15,844	878	42,902	8,056	1,144	1,186,905	60,029	1,984	54,539	--	--	--	148	784	--	--	--
Central Hardwood																				
Anoka	5,590	--	2,100	1,758	29	104	--	50	1,079	--	--	259	--	--	--	19	83	82	27	--
Benton	7,420	7,231	--	73	--	--	--	--	116	--	--	--	--	--	--	--	--	--	--	--
Chisago	3,571	--	111	1,833	52	159	--	181	64	--	88	338	--	12	11	252	162	264	12	30
Douglas	10	--	--	--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	--
Goodhue	531	--	--	334	122	--	--	--	75	--	--	--	--	--	--	--	--	--	--	--
Isanti	6,015	--	30	5,110	20	219	--	--	623	--	--	--	--	--	--	--	--	10	3	--
Kanabec	15,674	--	--	695	--	--	--	1	14,646	12	--	276	--	--	--	--	44	--	--	--
Mille Lacs	56,402	--	394	470	4	11	--	--	55,421	2	--	17	--	--	--	--	82	--	--	--
Morrison	24,154	--	1,682	2,229	--	682	731	--	18,659	45	--	125	--	--	--	--	--	--	--	--
Olmsted	151	--	--	151	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Otter Tail	28,369	--	--	25	--	--	--	--	27,831	429	--	84	--	--	--	--	--	--	--	--
Pine	119,939	2,692	1,853	3,694	43	1,333	--	202	98,269	732	204	6,544	0	12	11	1,653	2,386	267	12	30
Sherburne	1,653	411	57	973	17	50	--	6	101	--	--	24	--	--	--	2	11	--	--	--
Stearns	1,470	--	--	--	--	--	--	--	1,470	--	--	--	--	--	--	--	--	--	--	--
Todd	3,224	--	29	39	--	--	--	--	3,132	24	--	--	--	--	--	--	--	--	--	--
Wabasha	960	--	141	446	34	--	--	--	339	--	--	--	--	--	--	--	--	--	--	--
Washington	265	--	--	--	--	--	--	21	--	--	--	202	--	--	--	7	34	--	--	--
Winona	1,243	--	415	620	15	142	--	5	13	--	--	14	--	--	--	8	13	--	--	--
Total	276,641	10,335	6,812	18,451	336	2,701	731	467	221,847	1,244	292	7,883	0	25	23	1,941	2,816	624	53	59
Prairie																				
Kittson	9,794	--	--	--	--	--	--	--	9,619	175	--	0	--	--	--	--	--	--	--	--
Marshall	17,371	--	--	--	--	--	--	--	16,128	1,242	--	2	--	--	--	--	--	--	--	--
Norman	8,644	--	--	--	--	--	--	--	8,639	5	--	--	--	--	--	--	--	--	--	--
Pennington	5,361	--	--	--	--	--	--	--	5,277	84	--	--	--	--	--	--	--	--	--	--
Polk	7,191	--	--	--	--	--	--	--	7,012	179	--	--	--	--	--	--	--	--	--	--
Red Lake	3,434	--	--	--	--	--	--	--	3,392	15	--	28	--	--	--	--	--	--	--	--
Total	51,796	--	--	--	--	--	--	--	50,067	1,699	--	30	--	--	--	--	--	--	--	--
State total	2,875,422	194,841	85,628	39,067	1,500	168,472	21,137	3,390	2,108,216	112,145	2,364	122,750	1	37	34	8,154	6,634	899	65	89

[1] *Includes only those counties that supplied pulpwood in 1997.*

[2] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air spce.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 7.--*Pulpwood receipts in Minnesota by year, product form, and species group, 1946-1997*

(*In thousand standard cords*) [1]

Year	Total	Roundwood								Residue	
		Pine	Balsam fir	Cedar	Spruce	Tamarack	Aspen	Birch	Other hardwods	Softwoods	Hardwoods
1946	599	175	62	--	141	6	207	--	--	3	5
1947	497	160	48	--	122	6	158	--	--	1	2
1948	726	187	77	--	195	3	264	--	--	--	--
1949	418	111	48	--	114	1	144	--	--	--	--
1950	595	177	41	--	108	1	267	--	1	--	--
1951	823	241	74	--	202	9	296	--	1	--	--
1952	720	154	62	--	191	9	302	--	2	--	--
1953	662	165	42	--	153	6	292	--	4	--	--
1954	687	163	52	--	171	6	289	--	6	--	--
1955	723	177	58	--	176	7	298	2	5	--	--
1956	835	204	69	--	176	9	365	3	9	--	--
1957	753	156	74	--	210	10	292	5	6	--	--
1958	699	161	55	--	133	3	338	2	7	--	--
1959	813	195	69	--	128	3	405	1	12	--	--
1960	787	164	85	--	116	3	408	1	10	--	--
1961	784	187	67	--	120	--	375	1	34	--	--
1962	828	189	75	--	111	--	418	1	34	--	--
1963	921	190	77	--	157	--	446	--	50	--	1
1964	938	213	68	--	153	--	455	--	43	--	6
1965	912	205	60	--	138	--	462	--	39	--	8
1966	1,063	207	60	--	155	--	588	1	31	--	21
1967	958	179	49	--	115	2	551	1	25	5	31
1968	993	206	33	--	92	--	576	--	27	13	46
1969	1,082	231	33	--	84	--	633	3	40	7	51
1970	1,058	188	42	--	111	--	557	31	33	22	74
1971	1,063	154	40	--	116	--	585	34	38	32	64
1972	1,224	166	65	--	128	4	686	41	36	23	75
1973	1,223	156	60	--	142	7	618	41	38	51	110
1974	1,392	193	84	--	142	10	718	37	40	73	95
1975	1,227	169	116	--	163	32	560	33	21	51	82
1976	1,177	134	68	--	142	7	599	43	31	62	91
1977	1,210	143	94	--	125	16	624	27	24	55	102
1978	1,218	151	90	--	136	10	647	3	31	60	90
1979 [2]	1,294	130	109	--	131	18	733	3	28	66	76

1980	1,097	106	80	--	128	14	613	--	47	51	58
1981	1,164	116	71	--	95	5	725	1	52	37	62
1982	1,299	154	93	--	103	18	785	--	56	45	45
1983	1,782	137	87	--	78	8	1,313	1	69	48	41
1984	1,962	179	126	--	83	2	1,421	--	62	40	49
1985	1,775	135	106	--	77	7	1,320	--	49	39	42
1986	1,930	140	97	--	73	11	1,455	1	48	47	58
1987	2,029	107	108	--	75	8	1,578	1	43	52	57
1988	2,083	118	184	--	109	10	1,496	1	59	53	53
1989	2,201	119	206	--	124	4	1,595	--	55	52	46
1990	2,287	137	203	4	133	2	1,639	1	77	31	60
1991	2,380	164	197	--	141	4	1,698	--	90	30	56
1992	2,608	120	197	--	116	--	1,965	3	116	28	64
1993	2,805	133	220	--	125	--	2,188	10	128	35	80
1994	2,841	113	207	--	138	--	2,191	29	163	95	65
1995	2,867	132	227	--	120	3	2,192	67	127	53	61
1996	2,756	89	213	--	108	3	2,158	73	112	52	78
1997	2,735	76	198	--	113	2	2,120	83	141	21	47

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Pulpwood includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.*

Rows and columns may not sum due to rounding.

Table 8.--*Pulpwood receipts in Minnesota by area of origin, 1960- 1997*

(*In thousand standard cords*) [1]

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	Canada
1960	702	--	19	626	--	57
1961	793	--	14	721	--	58
1962	786	--	15	711	--	60
1963	805	--	20	712	--	73
1964	835	--	19	753	--	63
1965	898	--	8	828	1	61
1966	1,140	1	13	970	77	79
1967	958	--	15	884	1	58
1968	992	--	22	900	1	69
1969	1,082	--	17	977	2	86
1970	1,058	--	11	981	1	65
1971	1,064	--	35	992	1	36
1972	1,224	--	28	1,168	2	26
1973	1,222	--	14	1,152	29	27
1974	1,392	--	14	1,297	16	65
1975	1,226	--	20	1,173	18	15
1976	1,177	--	23	1,109	26	19
1977	1,209	--	26	1,149	19	15
1978	1,218	--	26	1,155	20	17
1979 [2]	1,295	--	21	1,226	29	19
1980	1,097	--	18	1,044	20	15
1981	1,164	--	34	1,119	--	11
1982	1,298	--	26	1,264	--	8
1983	1,782	--	53	1,720	--	9
1984	1,961	--	65	1,888	--	8
1985	1,775	--	59	1,714	--	2
1986	1,930	--	56	1,873	--	1
1987	2,029	--	62	1,967	--	--
1988	2,083	--	80	2,002	--	1
1989	2,201	2	89	2,110	--	--
1990	2,287	2	83	2,200	--	2
1991	2,373	5	69	2,269	--	30
1992	2,608	3	56	2,520	--	28
1997	2,803	1	45	2,654	2	102

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Includes logs, bolts, and wood residue used in manufacturing particle board and waferboard after 1978.*

Table 9.--*Pulpwood receipts in Minnesota by product form, species group, and area of origin, 1997*

(*In thousand standard cords, unpeeled*) [1]

Product form and species group	Total	Area of origin				
		Michigan	Minnesota	Wisconsin	Other States	Canada
Roundwood						
Softwoods						
Balsam fir	198,327	1,042	190,063	7,151	--	72
Jack pine	47,127	--	44,906	2,221	--	--
Red pine	28,655	--	27,802	853	--	--
White pine	1,207	--	1,207	--	--	--
Spruce	113,811	--	111,681	1,426	--	703
Tamarack	1,880	--	1,880	--	--	--
Total	391,007	1,042	377,539	11,651	--	775
Hardwoods						
Ash	1,026	--	1,026	--	--	--
Aspen	2,120,752	--	2,019,832	22,820	2,241	75,860
Balsam poplar	128,346	--	111,004	111	45	17,186
Basswood	1,984	--	1,984	--	--	--
White birch	83,189	--	79,725	3,459	0	4
Hard maple	4,251	--	3,253	998	--	--
Soft maple	5,386	--	4,260	1,126	--	--
Total	2,344,933	--	2,221,084	28,514	2,286	93,050
All species	2,735,940	1,042	2,598,623	40,165	2,286	93,825
Residues [2]						
Softwood	20,607	--	18,656	1,619	--	333
Hardwood	47,282	--	36,380	3,089	--	7,813
Total	67,889	--	55,036	4,708	--	8,146
All material	2,803,830	1,042	2,653,659	44,873	2,286	101,970

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 10.--*Saw log production and receipts in Minnesota by species group 1992 and 1997*

(*In thousand board feet*) [1]

Species group	Production			Receipts		
	1992	1997 [2]	Change	1992	1997 [2]	Change
Softwoods						
Fir	3,959	5,026	27%	3,856	4,938	28%
Cedar	1,537	2,030	32%	1,589	2030	28%
Tamarack	211	156	-26%	211	156	-26%
Spruce	5,582	6,180	11%	5,398	6,191	15%
Jack pine	57,293	56,024	-2%	64,747	66,736	3%
Red pine	42,572	42,223	-1%	53,438	56,731	6%
White pine	13,072	9,006	-31%	15,976	10,669	-33%
Other softwoods	--	496		--	496	
Total	124,226	121,141	-2%	145,215	147,946	2%
Hardwoods						
Soft maple	2,452	2,172	-11%	1,836	1,936	5%
Hard maple	2,196	2,653	21%	1,747	2,324	33%
Birch	15,396	20,669	34%	15,350	20,341	33%
Hickory	193	373	93%	209	294	41%
Ash	7,258	5,723	-21%	7,129	5,610	-21%
Black walnut	227	496	119%	223	467	109%
Cottonwood	6,252	4,751	-24%	4,667	4,801	3%
Balsam poplar	1,523	956	-37%	1,601	974	-39%
Aspen	98,196	71,456	-27%	100,579	71,487	-29%
Red oak group	38,831	36,263	-7%	31,135	30,522	-2%
White oak group	9,713	10,932	13%	7,041	9,356	33%
Basswood	13,794	12,452	-10%	12,161	11,614	-4%
Elm	2,133	990	-54%	1,929	716	-63%
Other hardwoods	819	5,148	529%	68	5,119	7428%
Total	198,986	175,404	-12%	185,675	165,845	-11%
All species	323,212	296,545	-8%	330,890	313,791	-5%

[1] *International 1/4-inch rule.*

[2] *Reflects changes in reporting techniques as described in foreword.*

Table 11.--*Saw log production by Forest Survey Unit, species group, and State of destination, Minnesota, 1997*

(*In thousand board feet*) [1]

ALL UNITS

Species	Total	Destination				
		Iowa	Michigan	Minnesota	Wisconsin	Canada
Softwoods						
Fir	5,026	--	15	4,908	--	103
Redcedar	60	--	--	60	--	--
Tamarack	156	--	--	156	--	--
Spruce	6,180	--	20	5,811	--	349
Jack pine	56,024	--	--	55,077	110	837
Red pine	42,223	--	--	41,313	534	375
White pine	9,006	--	--	8,755	251	--
N. white-cedar	1,970	--	--	1,970	--	--
Other/Unknown swds	496	--	--	496	--	--
Total	121,141	--	35	118,545	895	1,666
Hardwoods						
Soft maple	2,172	70	--	1,936	166	--
Hard maple	2,653	56	--	2,263	333	--
White birch	4683	--	--	4348	335	--
Yellow birch	15,986	--	--	15,986	--	--
Other/Unknown birch	3	--	--	3	--	--
Hickory	373	29	--	249	94	--
Hackberry	24	19	--	--	5	--
Ash	5,723	17	--	5,585	122	--
Butternut	26	--	--	26	--	--
Black walnut	496	4	--	456	36	--
Cottonwood	4,751	656	--	4,064	31	--
Balsam poplar	956	--	--	956	--	--
Aspen	71,456	95	--	71,269	93	--
Black cherry	325	--	--	258	67	--
Red oak group	36,263	585	--	28,879	6,800	--
White oak group	10,932	221	--	8,888	1,824	--
Willow	21	21	--	--	--	--
Basswood	12,452	261	--	11,461	730	--
Elm	990	6	--	698	286	--
Other/Unknown hwds	5,119	--	--	5,119	--	--
Total	175,404	2,041	--	162,442	10,921	--
All species	296,545	2,041	35	280,987	11,816	1,666

(table 11 continued on next page)

(table 11 continued)

ASPEN-BIRCH UNIT

Species	Total	Destination				
		Iowa	Michigan	Minnesota	Wisconsin	Canada
Softwoods						
Fir	2,944	--	6	2,835	--	103
Redcedar	18	--	--	18	--	--
Tamarack	56	--	--	56	--	--
Spruce	4,566	--	18	4,199	--	349
Jack pine	13,242	--	--	12,404	--	837
Red pine	11,159	--	--	10,651	133	375
White pine	3,811	--	--	3,811	--	--
N. white-cedar	1,562	--	--	1,562	--	--
Other/Unknown swds	250	--	--	250	--	--
Total	37,607	--	24	35,786	133	1,666
Hardwoods						
Soft maple	86	--	--	86	--	--
Hard maple	39	--	--	36	3	--
White birch	4471	--	--	4348	123	--
Yellow birch	8,550	--	--	8,550	--	--
Other/Unknown birch	3	--	--	3	--	--
Ash	766	--	--	766	--	--
Balsam poplar	517	--	--	517	--	--
Aspen	22,880	--	--	22,880	--	--
Red oak group	176	--	--	176	--	--
White oak group	92	--	--	92	--	--
Basswood	698	--	--	698	0	--
Other/Unknown hwds	103	--	--	103	--	--
Total	38,381	--	--	38,254	127	--
All species	75,988	--	24	74,040	259	1,666

CENTRAL HARDWOOD UNIT

Species	Total	Destination				
		Iowa	Michigan	Minnesota	Wisconsin	Canada
Softwoods						
Fir	0	--	0	--	--	--
Redcedar	35	--	--	35	--	--
Tamarack	13	--	--	13	--	--
Spruce	13	--	--	13	--	--
Jack pine	1,276	--	--	1,166	110	--
Red pine	3,660	--	--	3,492	169	--
White pine	624	--	--	374	251	--
Other/Unknown swds	20	--	--	20	--	--
Total	5,641	--	0	5,112	529	--
Hardwoods						
Soft maple	793	65	--	570	159	--
Hard maple	1,706	49	--	1,334	323	--
White birch	17	--	--	--	17	--
Yellow birch	470	--	--	470	--	--
Hickory	333	19	--	219	94	--
Hackberry	24	19	--	--	5	--
Ash	1,583	16	--	1,446	122	--
Butternut	26	--	--	26	--	--
Black walnut	238	4	--	198	36	--
Cottonwood	2,595	550	--	2,014	31	--
Balsam poplar	4	--	--	4	--	--
Aspen	8,905	77	--	8,736	93	--
Black cherry	215	--	--	148	67	--
Red oak group	24,266	570	--	16,915	6,781	--
White oak group	8,686	209	--	6,654	1,824	--
Willow	11	11	--	--	--	--
Basswood	4,088	243	--	3,120	726	--
Elm	861	3	--	572	286	--
Other/Unknown hwds	1,156	--	--	1,156	--	--
Total	55,978	1,836	--	43,580	10,562	--
All species	61,619	1,836	0	48,692	11,091	--

(table 11 continued on next page)

(table 11 continued)

NORTHERN PINE UNIT

Species	Total	Destination				
		Iowa	Michigan	Minnesota	Wisconsin	Canada
Softwoods						
Fir	2,081	--	9	2,073	--	--
Tamarack	84	--	--	84	--	--
Spruce	1,578	--	2	1,576	--	--
Jack pine	41,499	--	--	41,499	--	--
Red pine	27,389	--	--	27,156	233	--
White pine	4,571	--	--	4,571	--	--
N. white-cedar	408	--	--	408	--	--
Other/Unknown swds	202	--	--	202	--	--
Total	77,812	--	11	77,568	233	--
Hardwoods						
Soft maple	865	--	--	857	8	--
Hard maple	721	--	--	714	7	--
White birch	195	--	--	--	195	--
Yellow birch	6,958	--	--	6,958	--	--
Ash	2,766	--	--	2,766	--	--
Black walnut	32	--	--	32	--	--
Cottonwood	201	--	--	201	--	--
Balsam poplar	435	--	--	435	--	--
Aspen	39,427	--	--	39,427	--	--
Black cherry	16	--	--	16	--	--
Red oak group	10,523	--	--	10,505	19	--
White oak group	1,448	--	--	1,448	--	--
Basswood	7,116	--	--	7,113	4	--
Elm	33	--	--	33	--	--
Other/Unknown hwds	3,547	--	--	3,547	--	--
Total	74,282	--	--	74,051	232	--
All species	152,094	--	11	151,618	465	--

PRAIRIE UNIT

Species	Total	Destination				
		Iowa	Michigan	Minnesota	Wisconsin	Canada
Softwoods						
Redcedar	7	--	--	7	--	--
Tamarack	3	--	--	3	--	--
Spruce	23	--	--	23	--	--
Jack pine	8	--	--	8	--	--
Red pine	15	--	--	15	--	--
Other/Unknown swds	25	--	--	25	--	--
Total	81	--	--	81	--	--
Hardwoods						
Soft maple	428	5	--	423	--	--
Hard maple	186	7	--	179	--	--
Yellow birch	8	--	--	8	--	--
Hickory	40	10	--	30	--	--
Ash	608	1	--	607	--	--
Black walnut	226	--	--	226	--	--
Cottonwood	1,955	106	--	1,849	--	--
Aspen	245	18	--	227	--	--
Black cherry	94	--	--	94	--	--
Red oak group	1,298	15	--	1,283	--	--
White oak group	706	12	--	694	--	--
Willow	10	10	--	--	--	--
Basswood	549	18	--	531	--	--
Elm	96	3	--	93	--	--
Other/Unknown hwds	314	--	--	314	--	--
Total	6,762	205	--	6,558	--	--
All species	6,843	205	--	6,639	--	--

[1] *International 1/4-inch rule.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 12..—*Saw log production by Forest Survey Unit, county, and species group, Minnesota, 1997*

(*In thousand board feet*)[1]

Unit and county	Fir	Red-cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Other softwoods	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Other birch
Aspen-Birch															
Carlton	8	--	--	13	201	1,223	3	5	41	1,494	3	16	252	13	3
Cook	739	--	--	2,283	1,246	1,447	928	10	--	6,654	--	--	827	1,980	--
Koochiching	1,146	9	53	518	952	1,963	534	1,161	3	6,340	83	23	437	1,959	--
Lake	308	--	--	553	1,052	2,257	146	8	33	4,355	--	--	1718	2,800	--
St Louis	744	9	3	1,199	9,790	4,269	2,199	378	173	18,764	--	--	1237	1,798	--
Total	2,944	18	56	4,566	13,242	11,159	3,811	1,562	250	37,607	86	39	4471	8,550	3
Central Hardwood															
Anoka	--	--	--	--	2	21	22	--	--	46	1	2	--	--	--
Benton	--	--	--	--	2	81	2	--	--	85	--	--	0	--	--
Carver	--	--	--	--	4	1	6	--	--	11	22	14	--	--	--
Chisago	--	--	--	--	0	3	19	--	2	24	22	10	--	--	--
Dakota	--	1	--	--	1	0	1	--	--	3	--	--	--	--	--
Douglas	--	--	--	--	--	--	--	--	--	--	11	19	0	10	--
Fillmore	--	--	--	--	19	4	27	--	--	50	20	271	--	--	--
Goodhue	--	--	--	1	--	--	1	--	--	2	21	218	--	--	--
Hennepin	--	--	--	--	1	0	2	--	10	13	37	17	--	--	--
Houston	--	--	--	--	--	114	95	--	--	209	48	239	0	32	--
Isanti	--	--	--	--	0	395	75	--	--	470	2	3	--	--	--
Kanabec	--	--	--	--	--	54	24	--	--	78	79	94	3	5	--
Le Sueur	--	1	--	1	0	0	1	--	--	3	15	1	--	--	--
Mille Lacs	--	--	--	--	225	709	70	--	--	1004	1	3	1	--	--
Morrison	--	--	--	--	84	315	16	--	1	417	53	53	0	96	--
Olmsted	--	--	--	2	1	0	2	--	--	5	6	38	--	--	--
Otter Tail	--	30	10	--	--	4	--	--	--	44	85	138	0	126	--
Pine	0	--	--	3	848	1,532	227	--	3	2,613	9	88	5	42	--
Rice	--	--	--	1	--	--	--	--	--	1	9	95	--	--	--
Scott	--	--	--	--	4	1	5	--	--	10	22	14	--	--	--
Sherburne	--	--	--	--	32	331	7	--	--	369	--	--	--	--	--
Stearns	--	--	--	--	--	2	1	--	3	6	17	21	--	--	--
Todd	--	--	3	--	45	14	8	--	1	71	95	138	1	127	--
Wabasha	--	--	--	4	2	0	7	--	--	13	99	56	5	--	--
Washington	--	--	--	--	3	78	6	--	--	87	74	35	--	--	--
Winona	--	--	--	1	1	0	2	--	--	4	31	138	2	32	--
Wright	--	3	--	--	--	--	--	--	--	3	13	--	--	--	--
Total	0	35	13	13	1,276	3,660	624	--	20	5,641	793	1,706	17	470	--
Northern Pine															
Aitkin	36	--	6	16	31	286	32	2	2	411	45	101	14	1,309	--
Becker	73	--	14	177	2,781	1,448	412	--	--	4,904	101	101	--	170	--
Beltrami	44	--	17	247	4,152	3,207	500	140	5	8,311	215	30	51	346	--
Cass	360	--	2	11	7,787	5,397	682	86	26	14,351	172	161	35	1,779	--
Clearwater	2	--	4	179	2,041	1,918	339	--	--	4,483	228	168	--	247	--
Crow Wing	7	--	12	12	6,159	2,448	226	--	8	8,872	84	84	--	314	--
Hubbard	10	--	4	497	8,626	2,915	328	--	--	12,380	--	--	14	27	--
Itasca	1,549	--	--	352	5,899	7,779	2,017	147	161	17,903	14	25	80	2,757	--
Lake of the Woods	--	--	16	56	1,054	560	1	8	--	1,694	--	--	--	2	--
Mahnomen	--	--	--	30	50	150	25	--	--	255	--	--	--	--	--
Roseau	--	--	--	1	1,297	560	1	26	--	1,885	--	--	--	1	--
Wadena	--	--	10	--	1,623	721	8	--	--	2,362	6	51	--	6	--
Total	2,081	--	84	1,578	41,499	27,389	4,571	408	202	77,812	865	721	195	6,958	--

Prairie															
Blue Earth	--	--	--	--	--	--	--	--	--	--	10	--	--	--	--
Brown	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chippewa	--	1	--	--	--	1	--	--	--	2	--	--	--	--	--
Clay	--	--	--	--	8	8	--	--	--	16	20	--	--	8	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dodge	--	--	--	1	--	--	--	--	--	1	--	--	--	--	--
Faribault	--	1	3	--	--	3	--	--	--	7	5	7	--	--	--
Freeborn	--	--	--	--	--	1	--	--	--	1	--	--	--	--	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--
Kandiyohi	--	2	--	--	--	--	--	--	--	2	5	--	--	--	--
Kittson	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lyon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Marshall	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
McLeod	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Meeker	--	3	--	--	--	1	--	--	--	4	--	--	--	--	--
Mower	--	--	--	--	--	1	--	--	--	1	--	--	--	--	--
Murray	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--
Nicollet	--	--	--	--	--	--	--	--	--	--	154	64	--	--	--
Nobles	--	--	--	--	--	--	--	--	--	--	6	--	--	--	--
Norman	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pennington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polk	--	--	--	20	--	--	--	--	--	20	--	--	--	--	--
Pope	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--
Red Lake	--	--	--	--	--	--	--	--	25	25	--	--	--	--	--
Redwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Renville	--	--	--	--	--	--	--	--	--	--	144	80	--	--	--
Sibley	--	--	--	--	--	--	--	--	--	--	80	32	--	--	--
Steele	--	--	--	1	--	--	--	--	--	1	--	--	--	--	--
Waseca	--	--	--	1	--	--	--	--	--	1	--	1	--	--	--
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	7	3	23	8	15	--	--	25	81	428	186	--	8	--
State total	5,026	60	156	6,180	56,024	42,223	9,006	1,970	496	121,141	2,172	2,653	4,683	15,986	3

(table 12 continued on next page)

(table 12 continued)

Unit and county	Hickory	Hackberry	Ash	Butternut	Black walnut	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
Aspen-Birch																	
Carlton	--	--	19	--	--	--	18	597	--	71	5	--	10	--	29	1037	2,531
Cook	--	--	10	--	--	--	--	7,821	--	--	--	--	--	--	--	10,638	17,292
Koochiching	--	--	515	--	--	--	403	11,428	--	88	82	--	436	--	3	15,457	21,797
Lake	--	--	--	--	--	--	--	318	--	--	--	--	--	--	33	4,869	9,224
St Louis	--	--	222	--	--	--	96	2,716	--	17	5	--	252	--	38	6,380	25,144
Total	--	--	766	--	--	--	517	22,880	--	176	92	--	698	--	103	38,381	75,988
Central Hardwood																	
Anoka	--	0	--	--	6	--	--	12	3	72	55	--	--	--	--	151	197
Benton	--	--	8	--	--	--	--	7	--	14	9	--	8	--	91	137	222
Carver	--	--	13	1	1	331	--	6	5	57	98	--	75	--	20	643	654
Chisago	--	--	17	2	2	1	--	12	1	124	61	--	37	1	2	292	316
Dakota	--	--	1	1	4	3	--	1	6	18	7	--	--	--	2	43	46
Douglas	--	--	29	--	11	10	--	10	--	40	15	--	30	12	1	198	198
Fillmore	70	1	194	--	2	112	--	31	49	2,652	1,644	--	598	118	246	6,009	6,059
Goodhue	8	--	271	2	4	131	--	8	4	2,125	608	--	93	172	134	3,802	3,804
Hennepin	--	--	40	--	32	135	--	140	8	119	90	--	53	--	23	817	830
Houston	128	20	69	--	45	195	--	147	23	3,771	2,012	11	376	76	10	7,201	7,410
Isanti	--	--	1	--	--	--	4	13	1	37	17	--	--	--	--	78	548
Kanabec	--	--	119	1	32	200	--	701	16	1,465	225	--	382	2	253	3,577	3,655
Le Sueur	--	--	5	--	3	297	--	836	5	34	33	--	27	3	54	1,313	1,316
Mille Lacs	--	--	55	6	--	--	--	3698	--	1,393	123	--	176	--	--	5,456	6,460
Morrison	--	--	55	--	--	--	--	226	--	200	90	--	126	--	67	966	1,383
Olmsted	20	1	30	2	16	41	--	19	22	1,090	425	--	242	121	26	2,099	2,104
Otter Tail	--	--	94	--	1	--	--	176	--	826	289	--	450	8	51	2,243	2,287
Pine	--	--	108	--	--	--	--	2,666	--	1,658	176	--	190	--	4	4,946	7,559
Rice	10	--	79	--	1	24	--	1	2	869	313	--	54	75	15	1,548	1,549
Scott	--	--	16	--	13	332	--	15	6	57	99	--	62	3	21	660	670
Sherburne	--	--	--	--	--	--	--	--	--	7	--	--	--	--	--	7	376
Stearns	--	--	60	10	10	20	--	44	10	250	91	--	126	21	88	768	774
Todd	--	--	136	--	1	20	--	33	--	895	405	--	376	12	2	2,241	2,312
Wabasha	32	1	34	--	12	393	--	17	20	2,313	505	--	215	112	24	3,839	3,852
Washington	--	--	81	1	36	203	--	2	20	218	108	--	91	1	20	890	977
Winona	63	1	68	--	6	140	--	83	14	3,813	1,187	--	286	96	2	5,962	5,966
Wright	--	--	--	--	--	8	--	--	--	27	2	--	15	27	--	93	96
Total	333	24	1,583	26	238	2,595	4	8,905	215	24,266	8,686	11	4,088	861	1,156	55,978	61,619
Northern Pine																	
Aitkin	--	--	792	--	--	--	18	2,812	--	3,246	77	--	1,053	--	1,153	10,620	11,031
Becker	--	--	134	--	--	1	--	1,181	--	1,122	256	--	615	3	448	4,132	9,037
Beltrami	--	--	58	--	--	--	350	7,531	--	144	61	--	552	--	312	9,649	17,960
Cass	--	--	343	--	32	200	--	6,262	16	1,957	301	--	746	--	33	12,037	26,388
Clearwater	--	--	322	--	--	--	45	3,560	--	393	242	--	547	29	102	5,883	10,366
Crow Wing	--	--	164	--	--	--	--	3,423	--	1,617	152	--	360	--	9	6,207	15,079
Hubbard	--	--	5	--	--	--	4	1,432	--	234	35	--	8	--	50	1,809	14,189
Itasca	--	--	855	--	--	--	18	11,254	--	1,397	135	--	2,957	--	1,435	20,926	38,829
Lake of the Woods	--	--	4	--	--	--	--	1,274	--	8	--	--	--	--	--	1,288	2,982
Mahnomen	--	--	13	--	--	--	--	100	--	63	--	--	175	--	--	351	606
Roseau	--	--	10	--	--	--	--	12	--	1	--	--	--	--	--	24	1,909
Wadena	--	--	67	--	--	--	--	587	--	342	189	--	103	1	5	1,357	3,719
Total	--	--	2,766	--	32	201	435	39,427	16	10,523	1,448	--	7,116	33	3,547	742,782	152,094

Prairie																		
Blue Earth	--	--	5	--	1	158	--	--	--	7	4	--	--	--	34	219	219
Brown	--	--	8	--	--	15	--	--	--	--	--	--	--	--	3	26	26
Chippewa	--	--	--	--	1	--	--	--	--	1	--	--	--	1	1	4	6
Clay	--	--	20	--	--	28	--	11	--	11	8	--	8	8	60	182	198
Cottonwood	--	--	10	--	3	3	--	--	--	--	5	--	5	--	--	26	26
Dodge	--	--	2	--	1	--	--	--	1	2	1	--	--	--	--	7	8
Faribault	10	--	7	--	8	49	--	18	--	19	14	10	21	5	3	176	183
Freeborn	15	--	20	--	22	69	--	--	2	50	40	--	15	1	14	248	249
Grant	--	--	1	--	--	--	--	--	--	1	--	--	1	--	--	3	3
Jackson	--	--	2	--	2	8	--	--	--	2	--	--	--	--	2	18	18
Kandiyohi	--	--	21	--	--	10	--	1	1	51	21	--	12	5	2	129	131
Kittson	--	--	15	--	--	3	--	--	--	--	15	--	--	64	2	99	99
Lyon	--	--	11	--	--	40	--	--	--	--	--	--	--	--	4	55	55
Marshall	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	30	30
McLeod	--	--	3	--	--	2	--	--	--	2	2	--	2	--	--	11	11
Meeker	--	--	18	--	1	--	--	8	4	31	35	--	51	1	63	212	216
Mower	15	--	19	--	12	59	--	--	2	20	31	--	15	1	23	197	198
Murray	--	--	1	--	--	1	--	--	--	--	--	--	--	--	--	4	4
Nicollet	--	--	164	--	64	574	--	--	32	374	195	--	160	--	--	1,781	1,781
Nobles	--	--	6	--	6	30	--	--	--	6	--	--	--	--	6	60	60
Norman	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pennington	--	--	--	--	--	15	--	--	--	--	19	--	4	--	--	38	38
Polk	--	--	--	--	--	106	--	177	--	139	--	--	--	--	--	422	442
Pope	--	--	8	--	1	40	--	--	--	13	4	--	9	2	1	80	80
Red Lake	--	--	--	--	--	15	--	--	--	--	19	--	4	--	25	63	88
Redwood	--	--	12	--	--	24	--	--	--	--	--	--	--	--	4	40	40
Renville	--	--	164	--	65	400	--	--	32	368	192	--	160	4	1	1,610	1,610
Sibley	--	--	81	--	32	206	--	--	16	190	97	--	81	4	--	819	819
Steele	--	--	7	--	5	60	--	--	3	7	2	--	--	--	13	97	98
Waseca	--	--	3	--	2	40	--	--	1	4	2	--	1	--	33	87	88
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20	20	20
Total	40	--	608	--	226	1,955	--	245	94	1,298	706	10	549	96	314	6,762	6,843
State total	373	24	5,723	26	496	4,751	956	71,456	325	36,263	10,932	21	12,452	990	5,119	175,404	296,545

† *International 1/4-inch rule.*

Value of "0" greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 13.--*Saw log receipts in Minnesota by Forst Survey Unit, species group, and State of origin, 1997*

(*In thousand board feet*) [1]

ALL UN ITS

Species	Total	State of origin			
		Iowa	Minnesota	North Dakota	Wisconsin
Softwoods					
Fir	4,938	--	4,908	--	30
Redcedar	2,030	--	2,030	--	--
Tamarack	156	--	156	--	--
Spruce	6,191	--	5,811	--	380
Jack pine	66,736	--	55,077	--	11,659
Red pine	56,731	--	41,313	--	15,418
White pine	10,669	--	8,755	--	1,914
Other/Unknown swds	496	--	496	--	--
Total	147,946	--	118,545	--	29,401
Hardwoods					
Soft maple	1,936	--	1,936	--	--
Hard maple	2,324	61	2,263	--	--
White birch	20,341	--	4,348	--	--
Hickory	294	26	249	--	19
Ash	5,610	--	5,585	--	25
Black walnut	467	--	456	--	11
Cottonwood	4,801	--	4,064	737	--
Balsam poplar	974	--	956	--	18
Aspen	71,487	--	71,269	--	219
Black cherry	258	--	258	--	--
Red oak group	30,522	438	28,879	--	1,206
White oak group	9,356	254	8,888	--	214
Basswood	11,614	79	11,461	--	74
Elm	716	18	698	--	--
Other hwds	5,119	--	5,119	--	--
Total	165,845	876	162,442	737	1,790
All species	313,791	876	280,987	737	31,191

ASPEN-BIRCH UNIT

Species	Total	State of origin			
		Iowa	Minnesota	North Dakota	Wisconsin
Softwoods					
Fir	1,645	--	1,645	--	--
Redcedar	18	--	18	--	--
Tamarack	49	--	49	--	--
Spruce	3,918	--	3,918	--	--
Jack pine	8,463	--	7,067	--	1,396
Red pine	18,812	--	9,292	--	9,520
White pine	5,062	--	3,346	--	1,716
N. white-cedar	1,478	--	1,478	--	--
Other/Unknown swds	270	--	270	--	--
Total	39,714	--	27,082	--	12,632
Hardwoods					
Hard maple	10	--	10	--	--
White birch	4348	--	4348	--	--
Yellow birch	7,812	--	7,808	--	4
Other/Unknown birch	3	--	3	--	--
Ash	638	--	634	--	4
Balsam poplar	548	--	530	--	18
Aspen	16,019	--	15,851	--	168
Red oak group	27	--	27	--	--
White oak group	52	--	52	--	--
Basswood	34	--	30	--	4
Other/Unknown hwds	128	--	128	--	--
Total	29,619	--	29,421	--	198
All species	69,333	--	56,502	--	12,830

(table 13 continued on next page)

(table 13 continued)

CENTRAL HARDWOOD UNIT

Species	Total	State of origin			
		Iowa	Minnesota	North Dakota	Wisconsin
Softwoods					
Redcedar	38	--	38	--	--
Tamarack	33	--	33	--	--
Spruce	7	--	7	--	--
Jack pine	576	--	576	--	--
Red pine	1,774	--	1501	--	273
White pine	563	--	368	--	195
Other/Unknown swds	21	--	21	--	--
Total	3,012	--	2,544	--	468
Hardwoods					
Soft maple	523	--	523	--	--
Hard maple	1,346	61	1,285	--	--
Yellow birch	754	--	754	--	--
Hickory	249	26	204	--	19
Ash	1,372	--	1,351	--	21
Butternut	26	--	26	--	--
Black walnut	120	--	109	--	11
Cottonwood	1,372	--	1,372	--	--
Aspen	11,307	--	11,256	--	51
Black cherry	105	--	105	--	--
Red oak group	15,818	438	14,174	--	1,206
White oak group	6,500	254	6,032	--	214
Basswood	2,817	79	2,668	--	70
Elm	601	18	583	--	--
Other hardwoods	1,103	--	1,103	--	--
Total	44,011	876	41,543	--	1,592
All species	47,022	876	44,087	--	2,060

NORTHERN PINE UNIT

Species	Total	State of origin			
		Iowa	Minnesota	North Dakota	Wisconsin
Softwoods					
Fir	3,293	--	3,263	--	30
Tamarack	71	--	71	--	--
Spruce	2,240	--	1,860	--	380
Jack pine	57,636	--	47,373	--	10,263
Red pine	36,120	--	30,495	--	5,625
White pine	5,031	--	5,031	--	--
N. white-cedar	492	--	492	--	--
Other/Unknown swds	181	--	181	--	--
Total	105,063	--	88,765	--	16,298
Hardwoods					
Soft maple	739	--	739	--	--
Hard maple	679	--	679	--	--
Yellow birch	7,415	--	7,415	--	--
Ash	2,635	--	2,635	--	--
Cottonwood	843	--	106	737	--
Balsam poplar	426	--	426	--	--
Aspen	44,082	--	44,082	--	--
Red oak group	12,349	--	12,349	--	--
White oak group	1,700	--	1,700	--	--
Basswood	7,055	--	7,055	--	--
Elm	29	--	29	--	--
Other hardwoods	3,546	--	3,546	--	--
Total	81,497	--	80,760	737	--
All species	186,560	--	169,525	737	16,298

(table 13 continued on next page)

(table 13 continued)

PRAIRIE UNIT

Species	Total	State of origin			
		Iowa	Minnesota	North Dakota	Wisconsin
Softwoods					
Redcedar	4	--	4	--	--
Tamarack	3	--	3	--	--
Spruce	26	--	26	--	--
Jack pine	61	--	61	--	--
Red pine	26	--	26	--	--
White pine	13	--	10	--	3
Other/Unknown swds	25	--	25	--	--
Total	158	--	155	--	3
Hardwoods					
Soft maple	674	--	674	--	--
Hard maple	289	--	289	--	--
Yellow birch	9	--	9	--	--
Hickory	45	--	45	--	--
Ash	965	--	965	--	--
Black walnut	347	--	347	--	--
Cottonwood	2,586	--	2,586	--	--
Aspen	80	--	80	--	--
Black cherry	153	--	153	--	--
Red oak group	2,329	--	2,329	--	--
White oak group	1,104	--	1,104	--	--
Basswood	1,709	--	1,709	--	--
Elm	86	--	86	--	--
Other hardwoods	343	--	343	--	--
Total	10,719	--	10,719	--	--
All species	10,877	--	10,874	--	3

[1] *International 1/4-inch rule.*

Rows and columns may not sum due to rounding.

Table 14.-- *Veneer log and bolt production and receipts in Minnesota for selected years, 1960-1997*

(*In million board feet*) [1]

Year	Production	Receipts
1960	10.2	1.1
1963	9.9	3.1
1965	8.5	1.1
1966	6.0	0.5
1968	5.2	0.5
1970	3.5	0.3
1972	4.2	0.4
1975	3.2	0.6
1980	6.5	3.5
1984	5.7	3.0
1988	16.2	11.6
1990	16.7	10.6
1992	17.4	10.7
1997	15.0	13.7

[1] *International 1/4-inch rule.*

Table 15.-- *Veneer log and bolt production and receipts by species group in Minnesota, 1992 and 1997*

(*In thousand board feet*) [1]

Species group	Production			Receipts		
	1992	1997	Change	1992	1997	Change
Hardwoods						
Ash	1,253	515	-738		514	514
Aspen	1,983	4,302	2,319	1,919	4,236	2,317
Basswood	2,958	2,109	-849		1,511	1,511
Birch	8,721	6,099	-2,622	8,654	6,090	-2,564
Black walnut	255	164	-91		116	116
Cottonwood	462	14	-448		14	14
Elm	146	61	-85		61	61
Red oak group	738	352	-386	83	316	233
White oak group	427	523	96		418	418
Other hardwoods	488	899	411		461	461
All species	17,431	15,038	-2,393	10,656	13,737	3,081

[1] *International 1/4-inch rule.*

Table 16.-- *Veneer log and bolt production by species group and State or country of destination, Minnesota, 1997*

(*In thousand board feet*) [1]

ALL UNITS

Species	Total	Destination			
		Minnesota	Wisconsin	Kentucky	Ohio
Hardwoods					
Soft maple	122	39	83	--	--
Hard maple	674	422	68	--	184
White birch	9	--	9	--	--
Yellow birch	6,090	6,090	--	--	--
Ash	515	514	--	--	1
Black walnut	164	109	--	15	40
Cottonwood	14	14	--	--	--
Aspen	4,302	4,236	67	--	--
Black cherry	102	--	8	8	86
Red oak group	352	316	36	--	--
White oak group	523	418	105	--	--
Basswood	2,109	1,511	598	--	--
Elm	61	61	--	--	--
Total	15,038	13,730	974	23	311

ASPEN-BIRCH UNIT

Species	Total	Destination			
		Minnesota	Wisconsin	Kentucky	Ohio
Hardwoods					
Hard maple	24	--	4	--	21
White birch	7	--	7	--	--
Yellow birch	4,263	4,263	--	--	--
Ash	20	20	--	--	0
Aspen	2,962	2,962	--	--	--
Basswood	0	--	0	--	--
Total	7,277	7,245	11	--	21

CENTRAL HARDWOOD UNIT

Species	Total	Destination			
		Minnesota	Wisconsin	Kentucky	Ohio
Hardwoods					
Soft maple	70	13	57	--	--
Hard maple	194	40	57	--	97
White birch	0	--	0	--	--
Yellow birch	305	305	--	--	--

Ash	74	74	--	--	0
Black walnut	135	93	--	11	31
Cottonwood	14	14	--	--	--
Aspen	282	216	67	--	--
Black cherry	102	--	8	8	86
Red oak group	183	149	34	--	--
White oak group	351	246	105	--	--
Basswood	1,190	593	597	--	--
Elm	57	57	--	--	--
Total	2,956	1,799	924	19	214

NORTHERN PINE UNIT

Species	Total	Destination			
		Minnesota	Wisconsin	Kentucky	Ohio
Hardwoods					
Soft maple	26	--	26	--	--
Hard maple	49	--	7	--	42
White birch	1	--	1	--	--
Yellow birch	1,523	1,523	--	--	--
Ash	254	253	--	--	1
Aspen	1,058	1,058	--	--	--
Black cherry	1	--	1	--	--
Red oak group	3	--	3	--	--
White oak group	0	--	0	--	--
Basswood	86	85	1	--	--
Total	3,000	2,919	39	--	43

PRAIRIE UNIT

Species	Total	Destination			
		Minnesota	Wisconsin	Kentucky	Ohio
Hardwoods					
Soft maple	26	26	--	--	--
Hard maple	407	382	--	--	25
Ash	167	167	--	--	0
Black walnut	29	16	--	3	9
Red oak group	167	167	--	--	--
White oak group	172	172	--	--	--
Basswood	833	833	--	--	--
Elm	4	4	--	--	--
Total	1,804	1,767	--	3	34

[1] *International 1/4-inch rule.*

Value of "0" indicates value greater than 0 but less than 500.

Table 17.--*Pole production by Forest Survey Unit, species group, Minnesota, 1997*

ALL UNITS

Species	Pieces	MCF [1]
Jack pine	35,370	212
Red pine	238,040	1,428
N. white-cedar	8,490	47
Total	270,360	1,687

ASPEN-BIRCH UNIT

Species	Pieces	MCF
Jack pine	17,690	106
Red pine	41,820	251
N. white-cedar	8,490	47
Total	68,000	404

NORTHERN PINE UNIT

Species	Pieces	MCF
Jack pine	17,680	106
Red pine	196,220	1,177
Total	213,900	1,283

[1] *Thousand cubic feet.*

All production stayed within MN.

Table 18.--*Post production by Forest Survey Unit and species group, Minnesota, 1997*

(*In thousands of pieces*)

ALL UNITS

Species	Total
Jack pine	6
Red pine	102
Total	108

All production remained in Minnesota's Northern Pine Unit.

Table 19.--*Wood material harvested for industrial roundwood by Forest Survey Unit, source of material, and species group, Minnesota, 1997* [1]

(*In thousand cubic feet*)

ALL UNITS

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole timber			Limbwood	Saplings	Cull trees	Dead trees					
Softwoods													
Fir	10,426.40	5,265.10	396	16,087.50	570.6	--	11.1	18	7,939.30	8,539.00	16,291.20	8,335.30	24,626.50
Redcedar	10.7	1	1	12.7	0.2	--	0.1	0.2	6.9	7.4	12.1	7.9	20.1
Tamarack	1,061.30	566.8	36.5	1,664.60	59.6	--	0.3	0.5	819	879.4	1,688.60	855.5	2,544.00
Spruce	9,342.80	4,578.20	373.3	14,294.30	500.5	--	13.6	21.9	7,071.30	7,607.30	14,457.00	7,444.70	21,901.70
Jack pine	14,410.70	3,244.40	1,129.60	18,764.60	382.7	0.1	127.4	179.9	9,720.00	10,410.10	18,325.10	10,849.60	29,174.70
Red pine	10,576.70	892.5	460.7	11,930.00	145.9	2.7	185.2	88.6	4,160.50	4,582.80	11,891.50	4,621.20	16,512.70
White pine	1,606.50	28.3	46.4	1,681.20	19.5	--	13.2	3.3	653.9	690	1,670.80	700.30	2,371.10
N. white-cedar	364.6	60.2	35.2	460	4.9	--	8.6	6.3	234.1	253.9	444.6	269.3	714
Other/Unknown swds	88.4	7.9	8.4	104.7	1.2	--	1.1	1.6	57.2	61.2	100.2	65.7	165.9
Total	47,888.20	14,624.30	2,487.10	64,999.60	1,685.20	2.8	360.5	319	30,662.40	32,914.90	64,779.30	33,149.50	98,030.70
Hardwoods													
Soft maple	459.3	346.5	91.5	897.2	47.2	13.7	28.2	4.4	331.7	425.2	899.3	423.1	1,322.40
Hard maple	657.00	417.30	128.90	1,203.30	50.4	13.4	45	4.3	466.00	579.20	1,187.50	594.90	1,782.40
White birch	4,250.50	5,383.20	495.6	10,129.30	324.4	27.3	448.6	8.8	5,094.50	5,903.70	10,442.90	5,590.20	16,033.00
Yellow birch	3,201.20	214.2	761.5	4,176.90	17.8	--	176.8	--	1,732.20	1,926.80	3,610.00	2,493.70	6,103.70
Other/Unknown birch	0.4	0	0.1	0.6	0	--	0	--	0.3	0.3	0.5	0.4	0.9
Hickory	54.20	6.7	13.9	74.80	0.7	0.1	1.9	0	33.6	36.40	63.70	47.50	111.20
Hackberry	3.5	0.3	0.9	4.7	0	--	0.1	--	2.2	2.3	4	3.1	7.1
Ash	996.4	225.5	235.2	1,457.20	16.5	1.5	48.1	0.5	659.1	725.6	1,288.50	894.3	2,182.80
Butternut	3.80	0.30	1	5.10	0	--	0.1	--	2.30	2.50	4.30	3.30	7.60
Black walnut	95.70	6.60	22.90	125.30	0.50	--	5.10	--	52.50	58.10	107.90	75.50	183.40
Cottonwood	688.2	63.7	177.1	929	4.8	0	24	0	425.9	454.7	780.6	603	1,383.70
Balsam poplar	3,535.90	4,812.60	349.5	8,698.10	236.5	0	408.5	0	4,604.90	5,249.90	8,993.50	4,954.50	13,948.00
Aspen	122,967.10	48,760.60	9,617.90	181,345.60	2,425.60	89.1	5,590.20	72.9	73,445.00	81,622.80	179,905.50	83,062.90	262,489.80
Black cherry	61.90	4.4	14.9	81.20	0.4	--	3.3	--	34.10	37.70	69.90	49.00	118.90
Other/Unknown cherry	--	--	--	--	0.4	0.1	2.9	0	8.7	12.2	3.5	8.7	12.2
Red oak group	4,594.50	77.3	1,460.60	6,132.50	127	2.6	1,998.10	29.8	4,597.50	6,755.40	6,829.80	6,058.10	12,887.90
White oak group	1,443.40	12.9	451.8	1,908.00	36.5	0.1	608.6	8.8	1,404.80	2,059.00	2,110.50	1,856.50	3,967.00
Willow	3	0.3	0.8	4.1	0	--	0.1	--	1.9	2	3.4	2.7	6.1
Basswood	2,174.30	270.1	526.9	2,971.30	20	0.8	103.8	0.3	1,305.70	1,430.60	2,569.30	1,832.60	4,401.90
Elm	152.40	15.20	38.50	206.10	1.40	0.1	6.00	0	92	99.50	175.10	130.50	305.60
Other/Unknown hwds	739.2	68.6	190.4	998.2	5.5	0.1	28.5	0	466.9	501.1	842	657.3	1,499.30
Total	146,082.10	60,661.40	14,580.00	221,348.50	3,316.00	149.1	9,527.90	130.1	94,761.80	107,885.00	219,751.40	108,976.80	329,233.50
All species	193,970.30	75,379.30	17,067.10	286,348.10	5,001.20	151.9	9,888.50	450.3	125,424.30	140,916.10	284,530.70	142,032.80	427,264.20

(table 19 continued on next page)

(table 19 continued)

ASPEN-BIRCH UNIT

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limbwood	Saplings	Cull trees	Dead trees					
Softwoods													
Fir	5,704.10	2,864.80	218.8	8,787.70	310.5	--	6.5	10.5	4,339.40	4,666.80	8,896.40	4,558.20	13,454.60
Redcedar	3.2	0.3	0.3	3.8	0	--	0	0.1	2.1	2.2	3.6	2.4	6.00
Tamarack	613.80	330.60	20.7	965.10	34.7	--	0.1	0.2	474.50	509.50	979.50	495.20	1,474.60
Spruce	6,823.80	3,343.40	273.5	10,440.70	362.6	--	10	15.7	5,169.30	5,557.70	10,555.60	5,442.80	15,998.40
Jack pine	3,903.70	1007.6	286.6	5,197.90	115.9	--	30.9	42.4	2,654.70	2,843.90	5,100.50	2,941.30	8,041.90
Red pine	2,375.70	106.9	95.3	2,577.90	28.8	--	28.7	10.5	915.7	983.8	2,550.70	1,011.00	3,561.70
White pine	661.2	5.4	19.1	685.7	7.7	--	4.6	0.6	265.6	278.5	679.5	284.7	964.2
N. white-cedar	291.9	53.7	28.3	373.9	3.9	--	7.7	5	187	203.6	362.2	215.3	577.5
Other/Unknown swds	44.60	4.00	4.3	52.80	0.6	--	0.6	0.8	28.90	30.80	50.50	33.10	83.60
Total	20,422.00	7,716.70	946.9	29,085.60	864.9	--	89.1	85.7	14,037.20	15,076.90	29,178.50	14,984.00	44,162.60
Hardwoods													
Soft maple	59.00	151.70	4.7	215.40	25.7	8.5	6.1	2.7	45.70	88.70	253.60	50.40	304.00
Hard maple	150.5	279.5	12.6	442.6	30.8	7.9	17.5	2.6	170.2	229	488.8	182.8	671.6
White birch	2,384.20	2,681.50	321.6	5,387.40	169	16.7	229.2	5.4	2,664.30	3,084.60	5,486.10	2,985.90	8,472.00
Yellow birch	1,859.60	114.6	434.9	2,409.00	9.8	--	110.5	--	976.2	1,096.60	2,094.50	1,411.10	3,505.60
Other/Unknown birch	0.40	0.00	0.1	0.60	0	--	0	--	0.30	0.30	0.50	0.40	0.90
Hickory	0.20	0.60	0.00	0.70	0.1	0	0.00	0	0.10	0.30	0.90	0.10	1.00
Ash	164.7	87.7	33.6	286	5.7	0.5	10.2	0.2	136.2	152.7	269	169.8	438.7
Cottonwood	0	0	--	0	0	0	0	0	0	0	0	0	0
Balsam poplar	1,564.50	2,111.50	156.9	3,832.90	103.8	0	179.6	0	2,027.90	2,311.20	3,959.40	2,184.70	6,144.10
Aspen	38,115.00	15,044.10	2,983.10	56,142.20	758.6	28.5	1,748.50	23.3	22,749.80	25,308.70	55,718.10	25,732.80	81,450.90
Other/Unknown cherry	--	--	--	--	0.1	0	1	0	2.9	4.1	1.2	2.9	4.1
Red oak group	25.8	14	7.1	46.9	3.1	0.9	10.1	0.4	24.8	39.3	54.2	31.9	86.2
White oak group	11.6	0.7	3.7	16	0.4	0	5.1	0.1	11.7	17.3	17.9	15.4	33.3
Basswood	102.00	13.80	26.00	141.80	1.50	0.3	3.60	0.1	63.20	68.80	121.40	89.20	210.60
Elm	0.2	0.6	0	0.8	0.1	0	0	0	0.1	0.3	1	0.1	1.1
Other/Unknown hwds	14.9	1.4	3.8	20.1	0.2	0	1.5	0	12.1	13.9	18	16	34
Total	44,452.60	20,501.70	3,988.00	68,942.40	1,108.90	63.5	2,323.10	34.8	28,885.50	32,415.80	68,484.70	32,873.50	101,358.20
All species	64,874.60	28,218.50	4,934.90	98,028.00	1,973.80	63.5	2,412.20	120.6	42,922.60	47,492.80	97,663.20	47,857.50	145,520.70

CENTRAL HARDWOOD UNIT

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limbwood	Saplings	Cull trees	Dead trees					
Softwoods													
Fir	506.8	268	16	790.8	34.8	--	0	0.9	380	415.7	810.5	396	1,206.50
Redcedar	6.2	0.6	0.6	7.4	0.1	--	0.1	0.1	4	4.3	7.1	4.6	11.7
Tamarack	38.1	19.7	1.4	59.2	2.1	--	0	0	29.2	31.4	60	30.6	90.6
Spruce	135.9	63.8	3.9	203.7	13.8	--	0	1	91.3	106.2	214.6	95.3	309.9
Jack pine	561.1	198.2	32.3	791.60	25.2	--	2.8	4.5	399.5	432	791.80	431.8	1,223.60
Red pine	1,603.80	346.1	45.3	1,995.30	39.6	--	54.8	40.7	830.1	965.2	2,085.00	875.5	2,960.50
White pine	123.7	6.3	3.6	133.6	1.7	--	1.6	0.7	52.7	56.7	134	56.3	190.3
Other/Unknown swds	3.5	0.3	0.3	4.1	0	--	0	0.1	2.3	2.4	3.9	2.6	6.5
Total	2,979.20	903	103.4	3,985.60	117.3	--	59.4	48.1	1,789.20	2,013.90	4,106.90	1,892.60	5,999.60
Hardwoods													
Soft maple	182.2	143.9	35	361.1	18.5	5.2	12	1.7	136.1	173.5	363.5	171.1	534.7
Hard maple	304.2	119.3	69.7	493.2	18.2	5.5	15.2	1.8	186	226.8	464.3	255.7	720.00
White birch	184.5	363.5	14	562.1	40.6	10.6	21.9	3.4	213.7	290.3	624.7	227.7	852.3
Yellow birch	112.5	6.3	25.8	144.6	0.6	--	7.2	--	57.1	64.9	126.6	83	209.5
Hickory	48.3	5.6	12.4	66.3	0.5	0.1	1.7	0	30	32.3	56.3	42.3	98.6
Hackberry	3.5	0.3	0.9	4.7	0	--	0.1	--	2.2	2.3	4	3.1	7.1
Ash	248.2	43.7	61.4	353.3	4.9	1	10.1	0.3	154	170.4	308.3	215.4	523.7
Butternut	3.8	0.3	1	5.1	0	--	0.1	--	2.3	2.5	4.3	3.3	7.6
Black walnut	54.2	3.2	12.6	69.9	0.3	--	3.3	--	28	31.6	61	40.6	101.6
Cottonwood	376.80	34.80	96.90	508.60	2.6	0	13.2	0	233.00	248.80	427.40	329.90	757.40
Balsam poplar	38.3	53.3	3.6	95.2	2.6	--	4.5	--	50.5	57.6	98.7	54.1	152.8
Aspen	12,189.40	5,766.70	900.00	18,856.20	605.9	46.6	544.1	38.1	6,803.90	8,048.50	19,200.80	7,703.90	26,904.70
Black cherry	45.90	2.9	10.80	59.60	0.2	--	2.70	--	24.30	27.20	51.80	35.00	86.80
Other/Unknown cherry	--	--	--	--	0.3	0.1	1.9	0	5.8	8.20	2.30	5.80	8.20
Red oak group	3,067.40	52.7	976	4,096.10	85.3	1.7	1,336.30	20	3,074.80	4,518.10	4,563.40	4,050.80	8,614.10
White oak group	1,317.50	10.3	357.1	1,504.90	29	0.1	482.6	7	1,113.20	1,631.90	1,666.50	1,470.30	3,136.80
Willow	1.6	0.1	0.4	2.1	0	--	0.1	--	1	1.1	1.8	1.4	3.2
Basswood	770.6	68.7	185	1,024.40	6.3	0.6	40.1	0.2	431	478.1	886.5	616	1,502.50
Elm	133	12.8	33.6	179.5	1.1	0.1	5.3	0	80.1	86.6	152.3	113.7	266
Other/Unknown hwds	166.90	15.50	43.00	225.30	1.4	0.1	7.70	0	109.20	118.50	191.60	152.20	343.80
Total	19,069.00	6,704.00	2,839.20	28,612.20	818.6	71.6	2,520.10	72.6	12,736.20	16,219.10	29,255.90	15,575.40	44,831.30
All species	22048.2	7607	2942.7	32597.9	935.9	71.6	2579.5	120.7	14525.3	18233	33362.8	17468	50830.9

(table 19 continued on next page)

(table 19 continued)

NORTHERN PINE UNIT

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limbwood	Saplings	Cull trees	Dead trees					
Softwoods													
Fir	4,215.50	2,132.30	161.2	6,508.90	225.3	--	4.6	6.7	3,219.90	3,456.50	6,584.30	3,381.10	9,965.40
Tamarack	408.9	216.4	14.3	639.6	22.8	--	0.2	0.3	315	338.2	648.5	329.3	977.8
Spruce	2,379.10	1,170.60	95.5	3,645.10	124.1	--	3.5	5	1,808.10	1,940.60	3,682.20	1,903.50	5,585.70
Jack pine	9,944.40	2,018.50	810.5	12,773.40	241.6	0.1	93.6	132.9	6,664.80	7,133.10	12,431.20	7,475.40	19,906.50
Red pine	6,594.70	439.5	320	7,354.20	77.4	2.7	101.6	37.4	2,413.60	2,632.70	7,253.20	2,733.60	9,986.90
White pine	821.6	16.6	23.7	861.90	10.1	--	7	1.9	335.6	354.7	857.2	359.4	1,216.60
N. white-cedar	72.7	6.5	6.9	86.1	1	--	0.9	1.3	47.1	50.3	82.4	54	136.4
Other/Unknown swds	35.9	3.2	3.4	42.5	0.5	--	0.4	0.6	23.3	24.8	40.7	26.7	67.4
Total	24,472.70	6,003.50	1,435.60	31,911.80	702.8	2.8	211.8	186.2	14,827.40	15,931.10	31,579.80	16,263.00	47,842.80
Hardwoods													
Soft maple	152.5	45.1	35.1	232.7	2.5	--	7.6	--	110.3	120.4	207.7	145.4	353.1
Hard maple	115.80	16.00	28.6	160.40	1	--	4.9	--	72.90	78.90	137.80	101.50	239.30
White birch	1,680.80	2,336.90	160	4,177.60	114.7	--	197.3	--	2,215.40	2,527.40	4,329.70	2,375.40	6,705.10
Yellow irch	1,227.90	93.2	300.6	1,621.70	7.4	--	59	--	698.1	764.5	1,387.60	998.7	2,386.20
Ash	471.3	86	113.1	670.3	5.2	--	22	--	306.2	333.4	584.5	419.3	1003.8
Black walnut	4.60	0.40	1.2	6.20	0	--	0.2	--	2.90	3.10	5.20	4.10	9.30
Cottonwood	29.00	2.70	7.50	39.20	0.2	--	1.00	--	18.00	19.20	32.90	25.50	58.40
Balsam poplar	1,881.70	2,575.10	184.3	4,641.10	126.5	--	218.3	--	2,458.10	2,802.90	4,801.60	2,642.40	7,443.90
Aspen	69,897.60	26,696.50	525.90	102,320.00	1,025.90	14	3,157.00	11.5	42,226.70	46,434.90	101,002.30	47,752.60	148,754.90
Black cherry	2.4	0.2	0.6	3.2	0	--	0.1	--	1.5	1.6	2.7	2.1	4.8
Red oak group	1,314.80	9.5	421	1,745.20	34.7	--	577.8	8.4	1,326.10	1,947.00	1,945.10	1,747.10	3,692.20
White oak group	180.9	1.3	57.9	240.1	4.8	--	79.5	1.2	182.5	267.9	267.6	240.4	508
Basswood	1,100.30	180.3	272.6	1,553.20	11.3	--	44.1	--	721.1	776.5	1,335.90	993.7	2,329.70
Elm	4.8	0.4	1.2	6.4	0	--	0.2	--	3	3.2	5.4	4.2	9.6
Other/Unknown hwds	512.10	47.50	131.90	691.60	3.50	--	17.70	--	317.40	338.70	580.90	449.30	1,030.30
Total	78,576.40	32,291.20	7,241.40	118,109.00	1,337.70	14	4,386.60	21.1	50,660.00	56,419.50	116,627.10	57,901.50	147,528.50
All species	103,049.10	38,294.70	8,677.00	150,020.80	2,040.50	16.8	4,598.50	207.3	65,487.50	72,350.60	148,206.90	41,164.50	222,371.40

PRAIRIE UNIT

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limbwood	Saplings	Cull trees	Dead trees					
Softwoods													
Redcedar	1.2	0.1	0.1	1.5	0	--	0	0	0.8	0.9	1.4	0.9	2.3
Tamarack	0.5	0	0.1	0.6	0	--	0	0	0.3	0.4	0.6	0.4	1
Spruce	4.1	0.4	0.4	4.9	0.1	--	0.1	0.1	2.7	2.8	4.6	3	7.7
Jack pine	1.4	0.1	0.1	1.7	0	--	0	0	0.9	1	1.6	1.1	2.7
Red pine	2.5	--	0.1	2.6	0	--	0	--	1	1.1	2.6	1.1	3.7
Other/Unknown swds	4.5	0.4	0.4	5.3	0.1	--	0.1	0.1	2.9	3.1	5.1	3.3	8.4
Total	14.3	1	1.2	16.5	0.2	--	0.2	0.2	8.6	9.2	15.9	9.8	25.7
Hardwoods													
Soft maple	65.6	5.7	16.6	88	0.4	--	2.6	--	39.6	42.6	74.3	56.2	130.6
Hard maple	86.5	2.5	18.1	107	0.3	--	7.4	--	36.8	44.5	96.6	54.8	151.5
White birch	0.9	1.3	0.1	2.3	0.1	--	0.1	--	1.2	1.4	2.3	1.3	3.6
Yellow birch	1.2	0.1	0.3	1.6	0	--	0	--	0.7	0.8	1.3	1	2.3
Hickory	5.8	0.5	1.5	7.8	0	--	0.2	--	3.6	3.8	6.6	5.1	11.6
Ash	112.3	8.1	27.2	147.6	0.7	--	5.7	--	62.7	69	126.8	89.9	216.7
Black walnut	36.9	3	9.2	49.1	0.2	--	1.6	--	21.7	23.5	41.7	30.8	72.5
Cottonwood	282.3	26.2	72.7	381.2	2	--	9.8	--	175	186.7	320.2	247.7	567.9
Balsam poplar	51.5	72.7	4.8	128.9	3.6	--	6.1	--	68.5	78.2	133.9	73.2	207.1
Aspen	2,765.00	1,053.30	209	4,027.30	35.4	--	130.6	--	1,664.70	1,830.70	3,984.30	1,873.60	5,858.00
Black cherry	13.6	1.3	3.5	18.3	0.1	--	0.5	--	8.4	9	15.4	11.9	27.3
Red oak group	186.6	1.2	56.5	244.3	4.3	--	73.9	1	171.8	251.1	267.1	228.3	495.4
White oak group	113.4	0.6	33	147	2.4	--	41.5	0.6	97.5	141.9	158.5	130.4	288.9
Willow	1.4	0.1	0.4	2	0	--	0.1	--	0.9	1	1.6	1.3	2.9
Basswood	201.4	7.4	43.2	252	0.8	--	16	--	90.4	107.2	225.5	133.6	359.2
Elm	14.4	1.3	3.7	19.4	0.1	--	0.5	--	8.8	9.4	16.4	12.5	28.8
Other/Unknown hwds	45.3	4.2	11.7	61.2	0.3	--	1.6	--	28.1	30	51.4	39.8	91.2
Total	3,984.00	1,189.50	511.3	5,684.90	50.7	--	298.1	1.6	2,480.20	2,830.60	5,524.00	2,991.50	8,515.50
All species	3,998.30	1,190.60	512.5	5,701.50	50.9	--	298.3	1.8	2,488.80	2,839.80	5,539.90	3,001.30	8,541.20

Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

Table 20.—*Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

(*In thousand cubic feet*)

Unit and county	Fir	Red cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	White cedar	Other softwoods	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Other birch	Hickory	Hackberry
Aspen-Birch																	
Carlton	88	--	2	186	106	274	1	1	9	667	49	47	641	56	1	1	--
Cook	348	--	25	983	458	312	163	2	--	2,291	--	--	316	439	--	--	--
Koochiching	2,656	2	452	3,297	954	564	93	289	1	8,309	26	6	306	382	--	--	--
Lake	960	--	76	1,523	485	479	26	2	7	3,558	--	107	1263	896	--	--	--
St Louis	4,735	2	409	4,451	3,195	950	402	80	37	14,261	141	283	2,862	637	--	--	--
Total	8,788	4	965	10,441	5,198	2,578	686	374	53	29,086	215	443	5,387	2,409	1	1	--
Central Hardwood																	
Anoka	--	--	--	8	163	133	6	--	--	310	7	2	19	--	--	--	0
Benton	558	--	--	--	0	20	0	--	--	579	--	--	0	--	--	--	--
Carver	--	--	--	--	1	0	1	--	--	2	4	3	--	--	--	--	--
Chisago	--	--	--	12	9	136	7	--	0	164	16	18	23	--	--	1	--
Dakota	--	0	--	--	0	0	0	--	--	1	--	--	--	--	--	--	--
Douglas	--	--	--	--	--	--	--	--	--	--	2	4	0	2	--	--	--
Fillmore	--	--	--	--	4	1	5	--	--	9	5	55	--	--	--	14	0
Goodhue	--	--	--	0	--	25	9	--	--	34	6	49	--	--	--	2	--
Hennepin	--	--	--	--	0	0	0	--	2	3	7	3	--	--	--	--	--
Houston	--	--	--	--	--	20	17	--	--	36	13	51	0	6	--	25	4
Isanti	--	--	--	17	2	446	14	--	--	479	0	1	--	--	--	--	--
Kanabec	--	--	--	--	--	61	4	--	--	65	20	23	21	1	--	--	--
Le Sueur	--	0	--	0	0	0	0	--	--	1	3	0	--	--	--	--	--
Mille Lacs	--	--	--	1	78	158	13	--	--	250	6	1	1	--	--	--	--
Morrison	--	--	56	53	148	219	3	--	0	479	10	10	10	19	--	--	--
Olmsted	--	--	--	0	0	11	0	--	--	12	1	8	--	--	--	4	0
Otter Tail	--	6	2	--	--	3	--	--	--	11	17	27	6	25	--	--	--
Pine	201	--	--	96	319	537	43	--	1	1,195	165	132	462	61	--	1	--
Rice	--	--	--	0	--	--	--	--	--	0	3	22	--	--	--	2	--
Scott	--	--	--	--	1	0	1	--	--	2	4	3	--	--	--	--	--
Sherburne	32	--	--	4	11	129	2	--	--	178	1	0	2	--	--	--	--
Stearns	--	--	--	--	--	0	0	--	1	1	5	5	--	--	--	--	--
Todd	--	--	1	--	12	5	1	--	0	19	19	27	0	25	--	--	--
Wabasha	--	--	--	1	11	33	4	--	--	49	19	12	1	--	--	6	0
Washington	--	--	--	--	1	14	1	--	--	15	17	7	15	--	--	--	--
Winona	--	--	--	11	32	46	1	--	--	90	8	30	1	6	--	12	0
Wright	--	1	--	--	--	--	--	--	--	1	3	--	--	--	--	--	--
Total	791	7	59	204	792	1,995	134	--	4	3,986	361	493	562	145	--	66	5
Northern Pine																	
Aitkin	384	--	99	176	103	170	7	0	0	941	9	35	443	414	--	--	--
Becker	72	--	3	38	616	281	72	--	--	1,082	20	20	163	33	--	--	--
Beltrami	399	--	87	339	1,175	1,290	87	29	1	3,408	85	6	743	67	--	--	--
Cass	541	--	92	257	2,432	1,338	176	18	5	4,859	36	33	823	347	--	--	--
Clearwater	164	--	5	146	529	414	59	--	--	1,317	44	33	211	48	--	--	--
Crow Wing	69	--	6	68	1,843	649	42	--	2	2,679	16	16	253	61	--	--	--
Hubbard	46	--	10	136	2,042	636	57	--	--	2,927	4	--	542	5	--	--	--
Itasca	4,530	--	130	1,724	2,009	2,151	354	31	34	10,963	18	8	988	644	--	--	--
Lake of the Woods	279	--	97	584	688	100	0	2	--	1,749	--	--	3	0	--	--	--
Mahnomen	--	--	--	11	11	26	4	--	--	52	--	--	1	--	--	--	--
Roseau	26	--	106	166	491	98	0	5	--	892	--	--	1	0	--	--	--
Wadena	--	--	4	--	834	202	1	--	--	1,042	1	10	7	1	--	--	--
Total	6,509	--	640	3,645	12,773	7,354	862	86	43	31,912	233	160	4,178	1,622	--	--	--

Prairie																	
Blue Earth	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--
Brown	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--
Chippewa	--	0	--	--	--	0	--	--	--	0	--	--	--	--	--	--	--
Clay	--	--	--	--	2	1	--	--	--	3	4	--	--	2	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dodge	--	--	--	0	--	--	--	--	--	0	--	--	--	--	--	--	--
Faribault	--	0	1	--	--	1	--	--	--	1	1	1	--	--	--	2	--
Freeborn	--	--	--	--	--	0	--	--	--	0	--	--	--	--	--	3	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--
Kandiyohi	--	0	--	--	--	--	--	--	--	0	1	--	--	--	--	--	--
Kittson	--	--	--	--	--	--	--	--	--	--	--	2	0	--	--	--	--
Lyon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Marshall	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--
McLeod	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Meeker	--	1	--	--	--	0	--	--	--	1	--	--	--	--	--	--	--
Mower	--	--	--	--	--	0	--	--	--	0	--	--	--	--	--	3	--
Murray	--	--	--	--	--	--	--	--	--	--	0	0	--	--	--	--	--
Nicollet	--	--	--	--	--	--	--	--	--	--	32	51	--	--	--	--	--
Nobles	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--
Norman	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pennington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polk	--	--	--	4	--	--	--	--	--	4	--	--	--	--	--	--	--
Pope	--	--	--	--	--	--	--	--	--	--	0	0	--	--	--	--	--
Red Lake	--	--	--	--	--	--	--	--	5	5	--	--	2	--	--	--	--
Redwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Renville	--	--	--	--	--	--	--	--	--	--	28	16	--	--	--	--	--
Sibley	--	--	--	--	--	--	--	--	--	--	18	36	--	--	--	--	--
Steele	--	--	--	0	--	--	--	--	--	0	--	--	--	--	--	--	--
Waseca	--	--	--	0	--	--	--	--	--	0	--	0	--	--	--	--	--
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	1	1	5	2	3	--	--	5	17	88	107	2	2	--	8	--
All Units	16,087	13	1,665	14,294	18,765	11,930	1,681	460	105	65,000	897	1,203	10,129	4,177	1	75	5

(table 20 continued on next page)

(table 20 continued)

Unit and county	Ash	Butternut	Black walnut	Cottonwood	Balsam poplar	Aspen	Black cherry	Other cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
Aspen-Birch																
Carlton	28	--	--	0	60	2,207	--	0	29	2	--	8	1	6	3,132	3,798
Cook	2	--	--	--	--	4,641	--	--	--	--	--	--	--	--	5,398	7,690
Koochiching	106	--	--	--	2,003	19,699	--	--	15	14	--	85	--	1	22,642	30,951
Lake	79	--	--	--	668	3,050	--	--	--	--	--	--	--	6	6,068	9,626
St Louis	71	--	--	--	1,103	26,545	--	--	4	1	--	49	--	7	31,702	45,963
Total	286	--	--	0	3,833	56,142	--	0	47	16	--	142	1	20	68,942	98,028
Central Hardwood																
Anoka	4	--	1	--	--	87	1	--	18	11	--	--	--	--	149	459
Benton	2	--	--	--	--	11	--	--	2	1	--	2	--	18	35	614
Carver	3	0	0	65	--	1	1	--	9	16	--	15	--	4	121	123
Chisago	15	0	0	0	--	7	0	0	38	13	--	13	1	0	147	311
Dakota	0	0	1	1	--	0	1	--	3	1	--	--	--	0	8	8
Douglas	6	--	2	2	--	3	--	--	7	2	--	6	2	0	38	38
Fillmore	38	--	3	22	--	6	12	--	440	284	--	167	26	48	1,120	1,130
Goodhue	54	0	2	26	--	8	3	--	352	104	--	21	34	26	687	721
Hennepin	8	--	6	27	--	27	2	--	40	15	--	10	--	5	149	152
Houston	14	--	16	38	--	28	6	--	644	341	2	98	16	2	1,304	1,341
Isanti	0	--	--	--	1	52	0	--	7	3	--	--	--	--	64	543
Kanabec	28	0	6	39	1	1,299	3	--	244	41	--	82	0	49	1,859	1,924
Le Sueur	1	--	2	60	--	160	1	--	6	5	--	5	1	11	256	257
Mille Lacs	11	1	--	--	0	4,624	--	--	231	20	--	38	--	--	4,934	5,183
Morrison	11	--	--	--	3	1,628	--	--	33	15	--	25	--	13	1,776	2,256
Olmsted	6	0	3	8	--	4	8	--	181	72	--	62	24	5	387	399
Otter Tail	19	--	0	--	33	2,246	--	--	137	48	--	94	2	10	2,663	2,674
Pine	34	--	--	0	56	8,227	--	0	292	30	--	58	1	1	9,520	10,715
Rice	16	--	1	5	--	0	0	--	145	57	--	21	15	3	291	291
Scott	3	--	3	65	--	3	1	--	9	16	--	12	1	4	124	126
Sherburne	0	--	--	--	--	8	--	--	1	--	--	--	--	--	12	191
Stearns	12	2	2	4	--	125	2	--	42	17	--	25	4	17	262	263
Todd	27	--	0	4	2	255	--	--	150	68	--	73	2	0	652	671
Wabasha	7	--	3	77	--	30	7	--	383	91	--	60	24	5	726	775
Washington	17	0	7	40	--	0	4	--	37	20	--	20	0	4	190	205
Winona	18	--	10	27	--	17	7	--	640	210	--	113	21	0	1,121	1,211
Wright	--	--	--	2	--	--	--	--	4	0	--	3	5	--	17	18
Total	353	5	70	509	95	18,856	60	0	4,096	1,505	2	1,024	179	225	28,612	32,598
Northern Pine																
Aitkin	185	--	--	--	78	7,097	0	--	538	13	--	217	--	225	9,254	10,195
Becker	26	--	--	0	76	6,633	--	--	186	42	--	120	1	87	7,408	8,490
Beltrami	76	--	--	--	1,383	14,522	--	--	24	10	--	194	--	61	17,173	20,580
Cass	76	--	6	39	369	14,793	3	--	325	50	--	151	--	6	17,058	21,917
Clearwater	71	--	--	--	327	6,973	--	--	65	40	--	166	6	20	8,005	9,322
Crow Wing	32	--	--	--	81	6,584	--	--	268	25	--	70	--	2	7,410	10,089
Hubbard	7	--	--	--	235	10,687	--	--	39	6	--	2	--	10	11,535	14,462
Itasca	178	--	--	--	1,264	23,919	--	--	232	22	--	578	--	280	28,129	39,092
Lake of the Woods	1	--	--	--	617	7,174	--	--	1	--	--	--	--	--	7,796	9,545
Mahnomen	3	--	--	--	5	1,104	--	--	10	--	--	34	--	--	1,157	1,209
Roseau	2	--	--	--	201	1,254	--	--	0	--	--	--	--	--	1,458	2,351
Wadena	14	--	--	--	5	1,578	--	--	57	31	--	21	0	1	1,727	2,768
Total	670	--	6	39	4,641	102,320	3	--	1,745	240	--	1,553	6	692	118,109	150,021

Prairie																	
Blue Earth	1	--	1	31	--	--	--	--	1	1	--	--	--	7	43	43
Brown	5	--	1	3	--	--	--	--	3	3	--	16	1	1	33	33
Chippewa	--	--	0	--	--	--	--	--	0	--	--	--	0	0	1	1
Clay	4	--	--	5	--	2	--	--	2	1	--	2	2	12	35	38
Cottonwood	2	--	1	1	--	--	--	--	--	1	--	1	--	--	5	5
Dodge	0	--	0	--	--	--	0	--	0	0	--	--	--	--	1	1
Faribault	1	--	2	10	--	3	--	--	3	2	2	4	1	1	34	35
Freeborn	4	--	4	13	--	--	0	--	8	7	--	3	0	3	46	46
Grant	0	--	--	--	--	--	--	--	0	--	--	0	--	--	1	1
Jackson	0	--	0	2	--	--	--	--	0	--	--	--	--	0	3	3
Kandiyohi	4	--	--	2	--	0	0	--	8	3	--	2	1	0	23	23
Kittson	3	--	--	1	13	765	--	--	--	2	--	--	12	0	799	799
Lyon	2	--	--	8	--	--	--	--	--	--	--	--	--	1	11	11
Marshall	--	--	--	--	94	1,288	--	--	--	--	--	--	--	--	1,382	1,382
McLeod	1	--	--	0	--	--	--	--	0	0	--	0	--	--	2	2
Meeker	4	--	0	--	--	2	1	--	5	6	--	10	0	12	39	40
Mower	4	--	2	12	--	--	0	--	3	5	--	3	0	4	37	37
Murray	0	--	--	0	--	--	--	--	--	--	--	--	--	--	1	1
Nicollet	45	--	13	112	--	--	6	--	75	45	--	96	--	--	475	475
Nobles	1	--	1	6	--	--	--	--	1	--	--	--	--	1	12	12
Norman	--	--	--	--	0	687	--	--	--	--	--	--	--	--	687	687
Pennington	--	--	--	3	6	420	--	--	--	3	--	1	--	--	433	433
Polk	--	--	--	21	14	591	--	--	23	--	--	--	--	--	649	653
Pope	2	--	0	8	--	--	--	--	2	1	--	2	0	0	15	15
Red Lake	--	--	--	3	1	270	--	--	--	3	--	1	--	5	285	290
Redwood	2	--	--	5	--	--	--	--	--	--	--	--	--	1	8	8
Renville	32	--	13	78	--	--	6	--	61	32	--	31	1	0	298	298
Sibley	29	--	8	40	--	--	3	--	44	30	--	80	1	--	289	289
Steele	1	--	1	12	--	--	1	--	1	0	--	--	--	3	19	19
Waseca	1	--	0	8	--	--	0	--	1	0	--	0	--	6	17	17
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	4	4	4
Total	148	--	49	381	129	4,027	18	--	244	147	2	252	19	61	5,685	5,701
All Units	1,457	5	125	929	8,698	181,346	81	0	6,132	1,908	4	2,971	206	998	221,349	286,348

[1] *International 1/4-inch scale.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 21.—*Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Minnesota, 1997*

(*In thousand board feet*)[1]

Unit and county	Fir	Red cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Other softwoods	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Other birch	Hickory	Hackberry
Aspen-Birch																	
Carlton	210	--	6	440	332	1,375	3	5	38	2,407	60	77	1207	311	3	1	--
Cook	1,127	--	57	3,265	1,599	1,592	908	9	--	8,558	--	--	1027	2,112	--	--	--
Koochiching	6,688	8	1,078	7,917	2,727	2,603	520	1,117	3	22,661	93	24	782	1,794	--	--	--
Lake	2,371	--	178	3,790	1,579	2,457	144	7	30	10,558	--	185	3,182	4,537	--	--	--
St Louis	11,397	8	957	10,929	11,621	4,783	2,198	347	159	42,399	135	394	5,461	3,261	--	--	--
Total	21,792	17	2,276	26,342	17,857	12,811	3,773	1,485	229	86,583	288	680	11,658	12,016	3	1	--
Central Hardwood																	
Anoka	--	--	--	19	381	416	28	--	--	844	12	4	28	--	--	--	0
Benton	1,303	--	--	--	2	95	2	--	--	1,402	--	--	0	--	--	--	--
Carver	--	--	--	--	4	1	6	--	--	10	20	13	--	--	--	--	--
Chisago	--	--	--	29	20	415	30	--	2	496	39	26	26	--	--	1	--
Dakota	--	1	--	--	1	0	1	--	--	3	--	--	--	--	--	--	--
Douglas	--	--	--	--	--	--	--	--	--	--	10	19	0	9	--	--	--
Fillmore	--	--	--	--	18	4	26	--	--	48	25	262	--	--	--	64	0
Goodhue	--	--	--	1	--	75	28	--	--	105	28	239	--	--	--	8	--
Hennepin	--	--	--	--	1	0	2	--	9	12	34	16	--	--	--	--	--
Houston	--	--	--	--	--	111	92	--	--	203	63	245	0	29	--	118	18
Isanti	--	--	--	39	6	1,534	77	--	--	1,656	2	3	--	--	--	--	--
Kanabec	--	--	--	--	--	209	23	--	--	232	85	111	39	5	--	--	--
Le Sueur	--	1	--	1	0	0	1	--	--	3	14	1	--	--	--	--	--
Mille Lacs	--	--	--	2	277	796	69	--	--	1144	12	3	3	--	--	--	--
Morrison	--	--	132	123	381	808	16	--	1	1,460	49	49	17	88	--	--	--
Olmsted	--	--	--	2	1	34	2	--	--	39	5	37	--	--	--	19	1
Otter Tail	--	28	9	--	--	10	--	--	--	46	78	126	11	115	--	--	--
Pine	493	--	--	252	1,117	2,318	230	--	2	4,412	214	234	653	337	--	1	--
Rice	--	--	--	1	--	--	--	--	--	1	18	105	--	--	--	10	--
Scott	--	--	--	--	4	1	5	--	--	10	20	13	--	--	--	--	--
Sherburne	74	--	--	9	39	541	10	--	--	673	2	0	3	--	--	--	--
Stearns	--	--	--	--	--	2	1	--	3	6	23	23	--	--	--	--	--
Todd	--	--	3	--	47	22	8	--	1	80	87	126	1	116	--	--	--
Wabasha	--	--	--	4	27	101	14	--	--	146	90	60	5	--	--	29	1
Washington	--	--	--	--	3	76	6	--	--	84	72	33	27	--	--	--	--
Winona	--	--	--	26	75	140	5	--	--	247	35	139	4	29	--	58	1
Wright	--	3	--	--	--	--	--	--	--	3	12	--	--	--	--	--	--
Total	1,870	32	144	507	2,402	7,708	683	--	18	13,365	1,049	1,885	815	729	--	306	22
Northern Pine																	
Aitkin	912	--	234	418	250	601	36	2	2	2,454	41	144	776	2,096	--	--	--
Becker	199	--	13	164	2,621	1,498	401	--	--	4,895	93	93	283	156	--	--	--
Beltrami	951	--	209	897	4,555	5,375	487	128	5	12,606	282	27	1,317	317	--	--	--
Cass	1,415	--	215	604	9,035	6,436	839	79	24	18,646	169	158	1,447	1,629	--	--	--
Clearwater	384	--	14	418	2,102	2,115	330	--	--	5,363	209	154	366	226	--	--	--
Crow Wing	164	--	20	164	6,918	3,028	229	--	7	10,530	77	77	438	288	--	--	--
Hubbard	111	--	25	530	8,433	3,181	319	--	--	12,600	6	--	947	25	--	--	--
Itasca	11,232	--	304	4,173	7,245	10,042	1,970	134	147	35,248	39	28	1,758	3,123	--	--	--
Lake of the Woods	650	--	233	1,386	2,054	551	1	7	--	4,884	--	--	4	2	--	--	--
Mahnomen	--	--	--	38	46	146	24	--	--	255	--	--	2	--	--	--	--
Roseau	61	--	247	388	1,698	545	1	24	--	2,963	--	--	1	1	--	--	--
Wadena	--	--	14	--	2,658	933	8	--	--	3,613	5	47	12	5	--	--	--
Total	16,078	--	1,529	9,179	47,615	34,452	4,646	375	185	114,058	921	728	7,351	7,868	--	--	--

Prairie																	
Blue Earth	--	--	--	--	--	--	--	--	--	--	9	--	--	--	--	--	--
Brown	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--
Chippewa	--	1	--	--	--	1	--	--	--	2	--	--	--	--	--	--	--
Clay	--	--	--	--	7	8	--	--	--	15	18	--	--	7	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dodge	--	--	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--
Faribault	--	1	3	--	--	3	--	--	--	7	5	6	--	--	--	9	--
Freeborn	--	--	--	--	--	1	--	--	--	1	--	--	--	--	--	14	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	2	--	--	--	--	--	--
Kandiyohi	--	2	--	--	--	--	--	--	--	2	5	--	--	--	--	--	--
Kittson	--	--	--	--	--	--	--	--	--	--	--	11	0	--	--	--	--
Lyon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Marshall	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--
McLeod	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Meeker	--	3	--	--	--	1	--	--	--	4	--	--	--	--	--	--	--
Mower	--	--	--	--	--	1	--	--	--	1	--	--	--	--	--	14	--
Murray	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--
Nicollet	--	--	--	--	--	--	--	--	--	--	154	277	--	--	--	--	--
Nobles	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--
Norman	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pennington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polk	--	--	--	18	--	--	--	--	--	18	--	--	--	--	--	--	--
Pope	--	--	--	--	--	--	--	--	--	--	1	1	--	--	--	--	--
Red Lake	--	--	--	--	--	--	--	--	23	23	--	--	4	--	--	--	--
Redwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Renville	--	--	--	--	--	--	--	--	--	--	132	73	--	--	--	--	--
Sibley	--	--	--	--	--	--	--	--	--	--	86	199	--	--	--	--	--
Steele	--	--	--	1	--	--	--	--	--	1	--	--	--	--	--	--	--
Waseca	--	--	--	1	--	--	--	--	--	1	--	1	--	--	--	--	--
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	6	3	21	7	15	--	--	23	75	418	569	4	7	--	37	--
State total	39,741	55	3,952	36,050	67,882	54,985	9,102	1,859	455	214,081	2,676	3,863	19,828	20,621	3	343	22

(table 21 continued on next page)

(table 21 continued)

Unit and county	Ash	Butternut	Black walnut	Cottonwood	Balsam poplar	Aspen	Black cherry	Other cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
Aspen-Birch																
Carlton	28	--	--	0	60	2,207	--	0	29	2	--	8	1	6	3,132	3,798
Cook	2	--	--	--	--	4,641	--	--	--	--	--	--	--	--	5,398	7,690
Koochiching	106	--	--	--	2,003	19,699	--	--	15	14	--	85	--	1	22,642	30,951
Lake	79	--	--	--	668	3,050	--	--	--	--	--	--	--	6	6,068	9,626
St Louis	71	--	--	--	1,103	26,545	--	--	4	1	--	49	--	7	31,702	45,963
Total	286	--	--	0	3,833	56,142	--	0	47	16	--	142	1	20	68,942	98,028
Central Hardwood																
Anoka	4	--	1	--	--	87	1	--	18	11	--	--	--	--	149	459
Benton	2	--	--	--	--	11	--	--	2	1	--	2	--	18	35	614
Carver	3	0	0	65	--	1	1	--	9	16	--	15	--	4	121	123
Chisago	15	0	0	0	--	7	0	0	38	13	--	13	1	0	147	311
Dakota	0	0	1	1	--	0	1	--	3	1	--	--	--	0	8	8
Douglas	6	--	2	2	--	3	--	--	7	2	--	6	2	0	38	38
Fillmore	38	--	3	22	--	6	12	--	440	284	--	167	26	48	1,120	1,130
Goodhue	54	0	2	26	--	8	3	--	352	104	--	21	34	26	687	721
Hennepin	8	--	6	27	--	27	2	--	40	15	--	10	--	5	149	152
Houston	14	--	16	38	--	28	6	--	644	341	2	98	16	2	1,304	1,341
Isanti	0	--	--	--	1	52	0	--	7	3	--	--	--	--	64	543
Kanabec	28	0	6	39	1	1,299	3	--	244	41	--	82	0	49	1,859	1,924
Le Sueur	1	--	2	60	--	160	1	--	6	5	--	5	1	11	256	257
Mille Lacs	11	1	--	--	0	4,624	--	--	231	20	--	38	--	--	4,934	5,183
Morrison	11	--	--	--	3	1,628	--	--	33	15	--	25	--	13	1,776	2,256
Olmsted	6	0	3	8	--	4	8	--	181	72	--	62	24	5	387	399
Otter Tail	19	--	0	--	33	2,246	--	--	137	48	--	94	2	10	2,663	2,674
Pine	34	--	--	0	56	8,227	--	0	292	30	--	58	1	1	9,520	10,715
Rice	16	--	1	5	--	0	0	--	145	57	--	21	15	3	291	291
Scott	3	--	3	65	--	3	1	--	9	16	--	12	1	4	124	126
Sherburne	0	--	--	--	--	8	--	--	1	--	--	--	--	--	12	191
Stearns	12	2	2	4	--	125	2	--	42	17	--	25	4	17	262	263
Todd	27	--	0	4	2	255	--	--	150	68	--	73	2	0	652	671
Wabasha	7	--	3	77	--	30	7	--	383	91	--	60	24	5	726	775
Washington	17	0	7	40	--	0	4	--	37	20	--	20	0	4	190	205
Winona	18	--	10	27	--	17	7	--	640	210	--	113	21	0	1,121	1,211
Wright	--	--	--	2	--	--	--	--	4	0	--	3	5	--	17	18
Total	353	5	70	509	95	18,856	60	0	4,096	1,505	2	1,024	179	225	28,612	32,598
Northern Pine																
Aitkin	185	--	--	--	78	7,097	0	--	538	13	--	217	--	225	9,254	10,195
Becker	26	--	--	0	76	6,633	--	--	186	42	--	120	1	87	7,408	8,490
Beltrami	76	--	--	--	1,383	14,522	--	--	24	10	--	194	--	61	17,173	20,580
Cass	76	--	6	39	369	14,793	3	--	325	50	--	151	--	6	17,058	21,917
Clearwater	71	--	--	--	327	6,973	--	--	65	40	--	166	6	20	8,005	9,322
Crow Wing	32	--	--	--	81	6,584	--	--	268	25	--	70	--	2	7,410	10,089
Hubbard	7	--	--	--	235	10,687	--	--	39	6	--	2	--	10	11,535	14,462
Itasca	178	--	--	--	1,264	23,919	--	--	232	22	--	578	--	280	28,129	39,092
Lake of the Woods	1	--	--	--	617	7,174	--	--	1	--	--	--	--	--	7,796	9,545
Mahnomen	3	--	--	--	5	1,104	--	--	10	--	--	34	--	--	1,157	1,209
Roseau	2	--	--	--	201	1,254	--	--	0	--	--	--	--	--	1,458	2,351
Wadena	14	--	--	--	5	1,578	--	--	57	31	--	21	0	1	1,727	2,768
Total	670	--	6	39	4,641	102,320	3	--	1,745	240	--	1,553	6	692	118,109	150,021

Prairie																
Blue Earth	1	--	1	31	--	--	--	--	1	1	--	--	--	7	43	43
Brown	5	--	1	3	--	--	--	--	3	3	--	16	1	1	33	33
Chippewa	--	--	0	--	--	--	--	--	0	--	--	--	0	0	1	1
Clay	4	--	--	5	--	2	--	--	2	1	--	2	2	12	35	38
Cottonwood	2	--	1	1	--	--	--	--	--	1	--	1	--	--	5	5
Dodge	0	--	0	--	--	--	0	--	0	0	--	--	--	--	1	1
Faribault	1	--	2	10	--	3	--	--	3	2	2	4	1	1	34	35
Freeborn	4	--	4	13	--	--	0	--	8	7	--	3	0	3	46	46
Grant	0	--	--	--	--	--	--	--	0	--	--	0	--	--	1	1
Jackson	0	--	0	2	--	--	--	--	0	--	--	--	--	0	3	3
Kandiyohi	4	--	--	2	--	0	0	--	8	3	--	2	1	0	23	23
Kittson	3	--	--	1	13	765	--	--	--	2	--	--	12	0	799	799
Lyon	2	--	--	8	--	--	--	--	--	--	--	--	--	1	11	11
Marshall	--	--	--	--	94	1,288	--	--	--	--	--	--	--	--	1,382	1,382
McLeod	1	--	--	0	--	--	--	--	0	0	--	0	--	--	2	2
Meeker	4	--	0	--	--	2	1	--	5	6	--	10	0	12	39	40
Mower	4	--	2	12	--	--	0	--	3	5	--	3	0	4	37	37
Murray	0	--	--	0	--	--	--	--	--	--	--	--	--	--	1	1
Nicollet	45	--	13	112	--	--	6	--	75	45	--	96	--	--	475	475
Nobles	1	--	1	6	--	--	--	--	1	--	--	--	--	1	12	12
Norman	--	--	--	--	0	687	--	--	--	--	--	--	--	--	687	687
Pennington	--	--	--	3	6	420	--	--	--	3	--	1	--	--	433	433
Polk	--	--	--	21	14	591	--	--	23	--	--	--	--	--	649	653
Pope	2	--	0	8	--	--	--	--	2	1	--	2	0	0	15	15
Red Lake	--	--	--	3	1	270	--	--	--	3	--	1	--	5	285	290
Redwood	2	--	--	5	--	--	--	--	--	--	--	--	--	1	8	8
Renville	32	--	13	78	--	--	6	--	61	32	--	31	1	0	298	298
Sibley	29	--	8	40	--	--	3	--	44	30	--	80	1	--	289	289
Steele	1	--	1	12	--	--	1	--	1	0	--	--	--	3	19	19
Waseca	1	--	0	8	--	--	0	--	1	0	--	0	--	6	17	17
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	4	4	4
Total	148	--	49	381	129	4,027	18	--	244	147	2	252	19	61	5,685	5,701
All Units	1,457	5	125	929	8,698	181,346	81	0	6,132	1,908	4	2,971	206	998	221,349	286,348

[1] *International 1/4-inch scale.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 22.—*Harvest residues generated by industrial roundwood harvested by Forest Survey Unit, county, and species group, Minnesota, 1992*

(*In thousand cubic feet*)[1]

Unit and county	Fir	Red cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Other softwoods	Total softwoods	Soft maple	Hard maple	White birch	Yellow birch	Other birch	Hickory	Hackberry
Aspen-Birch																	
Carlton	45	--	1	96	59	116	0	1	5	323	14	10	340	25	0	0	--
Cook	196	--	13	559	265	125	68	1	--	1,226	--	--	193	274	--	--	--
Koochiching	1,387	1	233	1,700	470	182	39	162	0	4,174	16	4	181	248	--	--	--
Lake	499	--	39	793	274	195	11	1	4	1,815	--	61	744	509	--	--	--
St Louis	2,431	1	210	2,296	1,874	394	167	50	23	7,446	21	108	1,528	354	--	--	--
Total	4,558	2	495	5,443	2,941	1,011	285	215	33	14,984	50	183	2,986	1,411	0	0	--
Central Hardwood																	
Anoka	--	--	--	4	83	60	3	--	--	150	4	1	8	--	--	--	0
Benton	286	--	--	--	0	8	0	--	--	294	--	--	0	--	--	--	--
Carver	--	--	--	--	1	0	0	--	--	1	3	2	--	--	--	--	--
Chisago	--	--	--	6	4	61	3	--	0	76	6	4	6	--	--	0	--
Dakota	--	0	--	--	0	0	0	--	--	0	--	--	--	--	--	--	--
Douglas	--	--	--	--	--	--	--	--	--	--	1	3	0	1	--	--	--
Fillmore	--	--	--	--	3	0	2	--	--	5	3	35	--	--	--	9	0
Goodhue	--	--	--	0	--	11	4	--	--	15	3	31	--	--	--	1	--
Hennepin	--	--	--	--	0	0	0	--	1	2	5	2	--	--	--	--	--
Houston	--	--	--	--	--	8	7	--	--	15	8	32	0	4	--	16	2
Isanti	--	--	--	9	1	199	6	--	--	215	0	0	--	--	--	--	--
Kanabec	--	--	--	--	--	27	2	--	--	29	13	14	12	1	--	--	--
Le Sueur	--	0	--	0	0	0	0	--	--	0	2	0	--	--	--	--	--
Mille Lacs	--	--	--	0	45	67	5	--	--	118	4	0	1	--	--	--	--
Morrison	--	--	29	27	78	97	1	--	0	232	7	7	5	12	--	--	--
Olmsted	--	--	--	0	0	5	0	--	--	6	1	5	--	--	--	3	0
Otter Tail	--	4	1	--	--	1	--	--	--	6	11	17	4	16	--	--	--
Pine	94	--	--	40	179	229	18	--	0	560	52	35	180	29	--	0	--
Rice	--	--	--	0	--	--	--	--	--	0	2	13	--	--	--	1	--
Scott	--	--	--	--	1	0	0	--	--	1	3	2	--	--	--	--	--
Sherburne	16	--	--	2	6	56	1	--	--	82	0	0	1	--	--	--	--
Stearns	--	--	--	--	--	0	0	--	0	1	3	3	--	--	--	--	--
Todd	--	--	0	--	7	2	1	--	0	11	12	17	0	16	--	--	--
Wabasha	--	--	--	1	6	15	2	--	--	23	12	8	1	--	--	4	0
Washington	--	--	--	--	0	6	0	--	--	6	11	5	9	--	--	--	--
Winona	--	--	--	6	16	21	1	--	--	44	5	19	1	4	--	8	0
Wright	--	0	--	--	--	--	--	--	--	0	2	--	--	--	--	--	--
Total	396	5	31	95	432	875	56	--	3	1,893	171	256	228	83	--	42	3
Northern Pine																	
Aitkin	197	--	51	91	53	62	3	0	0	457	6	20	252	236	--	--	--
Becker	39	--	2	24	383	110	30	--	--	587	13	13	93	22	--	--	--
Beltrami	205	--	45	180	682	404	36	18	1	1,570	52	4	423	44	--	--	--
Cass	285	--	47	132	1,413	559	75	11	3	2,526	23	21	468	225	--	--	--
Clearwater	84	--	3	79	320	152	24	--	--	663	29	21	120	31	--	--	--
Crow Wing	35	--	4	35	1,093	273	18	--	1	1,458	11	11	144	40	--	--	--
Hubbard	24	--	5	82	1,255	239	24	--	--	1,629	2	--	308	3	--	--	--
Itasca	2,356	--	67	890	1,151	756	147	19	21	5,408	10	5	562	396	--	--	--
Lake of the Woods	143	--	50	300	378	41	0	1	--	913	--	--	1	0	--	--	--
Mahnomen	--	--	--	6	7	11	2	--	--	26	--	--	1	--	--	--	--
Roseau	13	--	54	85	283	40	0	3	--	479	--	--	0	0	--	--	--
Wadena	--	--	2	--	458	86	1	--	--	547	1	6	4	1	--	--	--
Total	3,381	--	329	1,904	7,475	2,734	359	54	27	16,263	145	102	2,375	999	--	--	--

Prairie																	
Blue Earth	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--
Brown	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--
Chippewa	--	0	--	--	--	0	--	--	--	0	--	--	--	--	--	--	--
Clay	--	--	--	--	1	1	--	--	--	2	3	--	--	1	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dodge	--	--	--	0	--	--	--	--	--	0	--	--	--	--	--	--	--
Faribault	--	0	0	--	--	0	--	--	--	1	1	1	--	--	--	1	--
Freeborn	--	--	--	--	--	0	--	--	--	0	--	--	--	--	--	2	--
Grant	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jackson	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--
Kandiyohi	--	0	--	--	--	--	--	--	--	0	1	--	--	--	--	--	--
Kittson	--	--	--	--	--	--	--	--	--	--	--	1	0	--	--	--	--
Lyon	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Marshall	--	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--
McLeod	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Meeker	--	0	--	--	--	0	--	--	--	0	--	--	--	--	--	--	--
Mower	--	--	--	--	--	0	--	--	--	0	--	--	--	--	--	2	--
Murray	--	--	--	--	--	--	--	--	--	--	0	0	--	--	--	--	--
Nicollet	--	--	--	--	--	--	--	--	--	--	21	25	--	--	--	--	--
Nobles	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--
Norman	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pennington	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polk	--	--	--	3	--	--	--	--	--	3	--	--	--	--	--	--	--
Pope	--	--	--	--	--	--	--	--	--	--	0	0	--	--	--	--	--
Red Lake	--	--	--	--	--	--	--	--	3	3	--	--	1	--	--	--	--
Redwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Renville	--	--	--	--	--	--	--	--	--	--	18	10	--	--	--	--	--
Sibley	--	--	--	--	--	--	--	--	--	--	11	17	--	--	--	--	--
Steele	--	--	--	0	--	--	--	--	--	0	--	--	--	--	--	--	--
Waseca	--	--	--	0	--	--	--	--	--	0	--	0	--	--	--	--	--
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	1	0	3	1	1	--	--	3	10	56	55	1	1	--	5	--
State total	8,335	8	855	7,445	10,850	4,621	700	269	66	33,150	423	595	5,590	2,494	0	48	3

(table 22 continued on next page)

(table 22 continued)

Unit and county	Hickory	Hackberry	Ash	Butternut	Black walnut	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Willow	Basswood	Elm	Other hardwoods	Total hardwoods	All species
Aspen-Birch																	
Carlton	--	--	19	--	--	--	18	597	--	71	5	--	10	--	29	1037	2,531
Cook	--	--	10	--	--	--	--	7,821	--	--	--	--	--	--	--	10,638	17,292
Koochiching	--	--	515	--	--	--	403	11,428	--	88	82	--	436	--	3	15,457	21,797
Lake	--	--	--	--	--	--	--	318	--	--	--	--	--	--	33	4,869	9,224
St Louis	--	--	222	--	--	--	96	2,716	--	17	5	--	252	--	38	6,380	25,144
Total	--	--	766	--	--	--	517	22,880	--	176	92	--	698	--	103	38,381	75,988
Central Hardwood																	
Anoka	--	0	--	--	6	--	--	12	3	72	55	--	--	--	--	151	197
Benton	--	--	8	--	--	--	--	7	--	14	9	--	8	--	91	137	222
Carver	--	--	13	1	1	331	--	6	5	57	98	--	75	--	20	643	654
Chisago	--	--	17	2	2	1	--	12	1	124	61	--	37	1	2	292	316
Dakota	--	--	1	1	4	3	--	1	6	18	7	--	--	--	2	43	46
Douglas	--	--	29	--	11	10	--	10	--	40	15	--	30	12	1	198	198
Fillmore	70	1	194	--	2	112	--	31	49	2,652	1,644	--	598	118	246	6,009	6,059
Goodhue	8	--	271	2	4	131	--	8	4	2,125	608	--	93	172	134	3,802	3,804
Hennepin	--	--	40	--	32	135	--	140	8	119	90	--	53	--	23	817	830
Houston	128	20	69	--	45	195	--	147	23	3,771	2,012	11	376	76	10	7,201	7,410
Isanti	--	--	1	--	--	--	4	13	1	37	17	--	--	--	--	78	548
Kanabec	--	--	119	1	32	200	--	701	16	1,465	225	--	382	2	253	3,577	3,655
Le Sueur	--	--	5	--	3	297	--	836	5	34	33	--	27	3	54	1,313	1,316
Mille Lacs	--	--	55	6	--	--	--	3698	--	1,393	123	--	176	--	--	5,456	6,460
Morrison	--	--	55	--	--	--	--	226	--	200	90	--	126	--	67	966	1,383
Olmsted	20	1	30	2	16	41	--	19	22	1,090	425	--	242	121	26	2,099	2,104
Otter Tail	--	--	94	--	1	--	--	176	--	826	289	--	450	8	51	2,243	2,287
Pine	--	--	108	--	--	--	--	2,666	--	1,658	176	--	190	--	4	4,946	7,559
Rice	10	--	79	--	1	24	--	1	2	869	313	--	54	75	15	1,548	1,549
Scott	--	--	16	--	13	332	--	15	6	57	99	--	62	3	21	660	670
Sherburne	--	--	--	--	--	--	--	--	--	7	--	--	--	--	--	7	376
Stearns	--	--	60	10	10	20	--	44	10	250	91	--	126	21	88	768	774
Todd	--	--	136	--	1	20	--	33	--	895	405	--	376	12	2	2,241	2,312
Wabasha	32	1	34	--	12	393	--	17	20	2,313	505	--	215	112	24	3,839	3,852
Washington	--	--	81	1	36	203	--	2	20	218	108	--	91	1	20	890	977
Winona	63	1	68	--	6	140	--	83	14	3,813	1,187	--	286	96	2	5,962	5,966
Wright	--	--	--	--	--	8	--	--	--	27	2	--	15	27	--	93	96
Total	333	24	1,583	26	238	2,595	4	8,905	215	24,266	8,686	11	4,088	861	1,156	55,978	61,619
Northern Pine																	
Aitkin	--	--	792	--	--	--	18	2,812	--	3,246	77	--	1,053	--	1,153	10,620	11,031
Becker	--	--	134	--	--	1	--	1,181	--	1,122	256	--	615	3	448	4,132	9,037
Beltrami	--	--	58	--	--	--	350	7,531	--	144	61	--	552	--	312	9,649	17,960
Cass	--	--	343	--	32	200	--	6,262	16	1,957	301	--	746	--	33	12,037	26,388
Clearwater	--	--	322	--	--	--	45	3,560	--	393	242	--	547	29	102	5,883	10,366
Crow Wing	--	--	164	--	--	--	--	3,423	--	1,617	152	--	360	--	9	6,207	15,079
Hubbard	--	--	5	--	--	--	4	1,432	--	234	35	--	8	--	50	1,809	14,189
Itasca	--	--	855	--	--	--	18	11,254	--	1,397	135	--	2,957	--	1,435	20,926	38,829
Lake of the Woods	--	--	4	--	--	--	--	1,274	--	8	--	--	--	--	--	1,288	2,982
Mahnomen	--	--	13	--	--	--	--	100	--	63	--	--	175	--	--	351	606
Roseau	--	--	10	--	--	--	--	12	--	1	--	--	--	--	--	24	1,909
Wadena	--	--	67	--	--	--	--	587	--	342	189	--	103	1	5	1,357	3,719
Total	--	--	2,766	--	32	201	435	39,427	16	10,523	1,448	--	7,116	33	3,547	742,782	152,094

Prairie																	
Blue Earth	1	--	0	20	--	--	--	--	1	1	--	--	--	4	28	28
Brown	2	--	0	2	--	--	--	--	1	1	--	7	0	0	16	16
Chippewa	--	--	0	--	--	--	--	--	0	--	--	--	0	0	1	1
Clay	3	--	--	4	--	1	--	--	2	1	--	1	1	8	24	25
Cottonwood	1	--	0	0	--	--	--	--	--	1	--	1	--	--	3	3
Dodge	0	--	0	--	--	--	0	--	0	0	--	--	--	--	1	1
Faribault	1	--	1	6	--	2	--	--	3	2	1	3	1	0	23	24
Freeborn	3	--	3	9	--	--	0	--	8	7	--	2	0	2	35	35
Grant	0	--	--	--	--	--	--	--	0	--	--	0	--	--	0	0
Jackson	0	--	0	1	--	--	--	--	0	--	--	--	--	0	2	2
Kandiyohi	3	--	--	1	--	0	0	--	8	3	--	2	1	0	19	19
Kittson	2	--	--	0	8	355	--	--	--	2	--	--	8	0	376	376
Lyon	1	--	--	5	--	--	--	--	--	--	--	--	--	1	7	7
Marshall	--	--	--	--	54	598	--	--	--	--	--	--	--	--	652	652
McLeod	0	--	--	0	--	--	--	--	0	0	--	0	--	--	2	2
Meeker	2	--	0	--	--	1	1	--	5	6	--	6	0	8	29	30
Mower	2	--	2	7	--	--	0	--	3	5	--	2	0	3	27	27
Murray	0	--	--	0	--	--	--	--	--	--	--	--	--	--	1	1
Nicollet	26	--	8	73	--	--	4	--	68	38	--	49	--	--	312	312
Nobles	1	--	1	4	--	--	--	--	1	--	--	--	--	1	8	8
Norman	--	--	--	--	0	319	--	--	--	--	--	--	--	--	319	319
Pennington	--	--	--	2	4	195	--	--	--	3	--	1	--	--	204	204
Polk	--	--	--	13	8	278	--	--	23	--	--	--	--	--	322	325
Pope	1	--	0	5	--	--	--	--	2	1	--	1	0	0	11	11
Red Lake	--	--	--	2	1	125	--	--	--	3	--	1	--	3	136	139
Redwood	2	--	--	3	--	--	--	--	--	--	--	--	--	1	5	5
Renville	21	--	9	51	--	--	4	--	61	32	--	20	1	0	226	226
Sibley	16	--	5	26	--	--	2	--	37	22	--	39	1	--	176	176
Steele	1	--	1	8	--	--	0	--	1	0	--	--	--	2	13	13
Waseca	0	--	0	5	--	--	0	--	1	0	--	0	--	4	11	11
Wilkin	--	--	--	--	--	--	--	--	--	--	--	--	--	3	3	3
Total	90	--	31	248	73	1,874	12	--	228	130	1	134	12	40	2,991	3,001
State total	894	3	75	603	4,954	83,063	49	9	6,058	1,857	3	1,833	130	657	109,342	142,491

[1] *International 1/4-inch rule.*

Value of "0" indicates value greater than 0 but less than 500.

Rows and columns may not sum due to rounding.

Table 23.--*Residue produced at primary wood-using mills by type of material, type of use, and Forest Survey Unit, Minnesota, 1997*

(*In thousand tons, green weight*)

Forest Survey Unit and type of use	Total		Wood residue					
			Coarse [1]		Fine [2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Aspen-Birch								
Fiber products	16.37	28.47	16.37	27.27	--	1.19	--	3.09
Industrial fuel-mill	15.52	110.84	8.90	32.01	6.62	78.83	56.60	315.14
Industrial fuel-sold	16.33	5.39	--	--	16.33	5.39	25.37	17.53
Domestic fuel	9.74	7.52	9.69	7.43	0.04	0.08	2.40	0.89
Miscellaneous [3]	65.03	46.05	0.64	24.39	64.39	21.66	2.83	1.12
Not used	21.42	8.96	7.85	1.31	13.57	7.65	19.25	15.66
Total	144.40	207.22	43.45	92.41	100.95	114.80	106.45	353.43
Central Hardwood								
Fiber products	2.89	39.85	2.89	38.68	--	1.17	--	--
Industrial fuel-mill	8.58	18.99	0.12	4.87	8.46	14.11	14.63	21.28
Industrial fuel-sold	--	12.17	--	6.69	--	5.48	--	--
Domestic fuel	3.09	67.71	2.95	67.08	0.14	0.64	0.09	0.87
Miscellaneous [3]	5.03	95.70	0.38	24.94	4.64	70.76	1.50	49.87
Not used	5.71	20.66	4.40	17.36	1.31	3.31	1.62	2.63
Total	25.30	255.09	10.75	159.62	14.55	95.47	17.85	74.65
Northern Pine								
Fiber products	308.54	111.96	308.53	111.95	0.02	0.01	--	--
Industrial fuel-mill	197.56	251.85	14.36	99.39	183.19	152.47	141.72	244.30
Industrial fuel-sold	--	13.10	--	--	--	13.10	--	27.19
Domestic fuel	50.78	86.61	28.07	70.76	22.71	15.85	14.87	4.36
Miscellaneous [3]	13.41	41.00	1.35	1.76	12.06	39.24	1.14	10.00
Not used	41.49	83.36	21.35	24.20	20.14	59.16	6.72	34.82
Total	611.78	587.88	373.65	308.05	238.12	279.83	164.45	320.67
Prairie								
Fiber products	--	0.60	--	0.60	--	0.00	--	--
Industrial fuel-mill	0.00	3.00	0.00	2.94	0.00	0.06	--	0.53
Domestic fuel	0.29	9.04	0.20	9.00	0.09	0.04	0.00	0.09
Miscellaneous [3]	0.09	29.04	0.01	13.96	0.09	15.09	0.01	13.24
Not used	0.09	24.55	0.02	22.45	0.07	2.11	0.03	1.77
Total	0.48	66.24	2.30	48.95	0.25	17.29	0.05	15.62

All Units								
Fiber products	327.80	180.88	327.79	178.50	0.02	2.38	--	3.09
Industrial fuel-mill	221.66	384.68	23.38	139.21	198.27	245.47	212.96	581.25
Industrial fuel-sold	16.33	30.67	--	6.69	16.33	23.97	25.37	44.72
Domestic fuel	63.90	170.88	40.92	154.28	22.97	16.60	17.36	6.21
Miscellaneous [3]	83.55	211.79	2.38	65.04	81.18	146.75	5.47	74.23
Not used	68.71	137.54	33.62	65.32	35.10	72.22	27.62	54.88
Total	781.95	1116.43	428.08	609.03	353.87	507.39	288.79	764.38

[1] *Suitable for chipping such as slabs, edgings, veneer cores, etc.*

[2] *Not suitable for chipping such as sawdust, veneer clippings, etc.*

[3] *Livestock bedding, mulch, small dimension, and specialty items.*

Value of "0" indicates value greater than 0 but less than 500.
Rows and columns may not sum due to rounding.

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Reading, William H., IV; Krantz, John.

2002. **Minnesota timber industry—an assessment of timber product output and use, 1997**. Resour. Bull. NC-204. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 71 p.

Discusses recent Minnesota forest industry trends as well as production and receipts of industrial roundwood by product, species, and county in 1997. Reports on logging residue, on wood and bark residue generated at primary wood-using mills, and on disposition of mill residues.

KEY WORDS: Industrial roundwood, production residues, saw logs, veneer logs.